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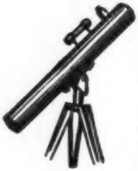

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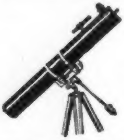

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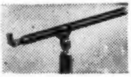

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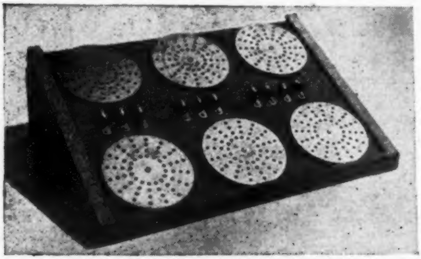

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JOHN W. CAMPBELL, JR.
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KAY TARRANT
*Assistant Editor*

*Advertising Manager:* WALTER J. McBRIDE
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*SYMBOL: Pressure extrusion.*

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*Astounding* SCIENCE FICTION published monthly by Street & Smith Publications, Incorporated, at 575 Madison Avenue, New York 22, N. Y. Arthur Z. Gray, President; Ralph R. Whittaker, Jr., Executive Vice-President; Arthur P. Lawler, Vice-President and Secretary; Robert E. Park, Vice-President and Advertising Director; Thomas H. Kaiser, Treasurer. © 1958 by Street & Smith Publications, Inc., in the United States and countries signatory to the Berne Convention and Pan American Convention. Entered as second-class matter at the Post Office, New York, N. Y. Subscription $3.50 for one year and $6.00 for two years in the United States, Possessions and Canada; $4.75 for one year and $8.00 for two years in Pan American Union, Philippine Islands and Spain. Elsewhere $5.00 for one year and $8.50 for two years. When possible allow four weeks for change of address. Give old address and new address when notifying us. We cannot accept responsibility for unsolicited manuscripts or art work. Any material submitted must include return postage. All subscriptions should be addressed to Subscription Department, Street & Smith Publications, Incorporated, 304 East 45th Street, New York 17, N. Y.

*Printed in* 173 *the U. S. A.*

***NEXT ISSUE ON SALE
MARCH 18, 1958***

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## EDITORIAL

# THE SCIENTIFIC METHOD

THIS is being written three days after the first United States effort to launch a satellite flopped so resoundingly. The Russian Sputnik was cause for considerable re-evaluation of the American attitudes—toward Russian efforts, and toward our own situation. The pattern of psychological, political, and physical forces surrounding the egregious failure of the first United States try to join Russia as one of the Space Powers, calls for some even more painful self-questioning.

Not only did Russia do a good job of research and development on their satellite—in addition, we did a poor job, and have, throughout, displayed an exceedingly supercilious attitude before the world. We earned what we got—fully, and of our own efforts. The ridicule we've collected is our just reward for our consistent efforts.

Item: Throughout August and September, Russian popular-science magazines and journals were publishing data concerning the Sputniks which, it was stated, would be launched later that fall. The Russian radio amateurs were informed of how to listen to the Sputnik signals.

No word of these publications was, however, publicly reported by the United States government; the preparations that Russia was making, and the progress made, was not considered fit news for American readers.

The American Governmental policy has been to belittle Russian technical achievements. The fact that Russian scientists cracked the problem of the thermonuclear bomb very shortly after we did was one that *had* to be acknowledged. It's so hard to conceal the fact that somebody has been setting off fusion bombs, you know.

But the interesting item that the Russian bomb was a practicable weapon, while our thermonuclear device was decidedly not—ours involved maintaining large quantities of liquid hydrogen (tritium) around, which is somewhat impracticable as a portable weapon—has not been adequately discussed. There's been much discussion of Russian spies stealing our secrets; Russian spies may have stolen our secrets on that bomb . . . but they threw 'em away after they got 'em, because they already had better secrets.

The United States, with its immense, developed and ready-for-use technical resources has a marked advantage over Russia. So we built the immense, and immensely costly Savannah River atomic plant to produce the tritium for that bomb.

The Russians didn't; they used the fusion of lithium and hydrogen; lithium hydride is a conveniently packageable solid. Tritium will "ignite" in thermonuclear reaction at about seventy million degrees; the lithium-hydrogen reaction takes a markedly higher temperature. An ordinary U-235 bomb will yield the temperature necessary for tritium fusion; it takes an application of ingenuity, not mere, straight-forward scientific logic, to make U-235 supply the heat necessary to ignite lithium hydride. The United States built that immense Savannah River plant, and synthesized enough tritium to blow an island out of existence. The Russians, not having the immense technological equipment we do, used ingenuity, and cheap lithium hydride. The result they achieved was a flyable thermonuclear weapon; not until we learned the trick of triggering lithium hydride did we have a flyable weapon.

In the meantime, that tritium monstrosity had involved such gargantuan quantities of uranium, as well as tritium, that its explosion poisoned the atmosphere of a major portion of the Pacific Ocean, far exceeding the original estimates of the scientists who computed it. The Russian style thermonuclear bomb uses very little uranium, and is the "clean" nuclear bomb discussed more recently. Lithium hydride, when it fuses in nuclear reaction, yields completely safe, stable products.

It might have helped our rockets research program if, instead of investing all that money, material, manpower, and engineering time in the Savannah River project, we had put a little less dependence on bulling our way through by straight, orthodox, standard science, and a little more emphasis on ingenuity of approach.

The Savannah River project *did* turn out to be useful in one respect, anyway; the first positive identification of neutrinos was possible at that plant. There was more nuclear activity going on in the immense reactors at Savannah River than anywhere else on Earth, which made detecting the neutrino possible.

But it rather hurts anyone's pride

to acknowledge that someone else, with ingenuity and mechanical simplicity, has surpassed his massive, complex, and carefully figured out effort.

The emotional effect is not unlike that involved in the incident of the truck, carrying a massive industrial tank, which became solidly, immovably wedged under a bridge. Police, truckers, and passers-by were gathered debating whether it would be cheaper to cut away part of the heavy steel tank to free the truck, or to cut away part of the bridge—when a small boy asked why they didn't let the air out of the truck's tires. He was right, of course—but it's anything but comfortable, emotionally, to acknowledge your own stolid, logical, but dull-witted failure to see the simple, ingenious approach.

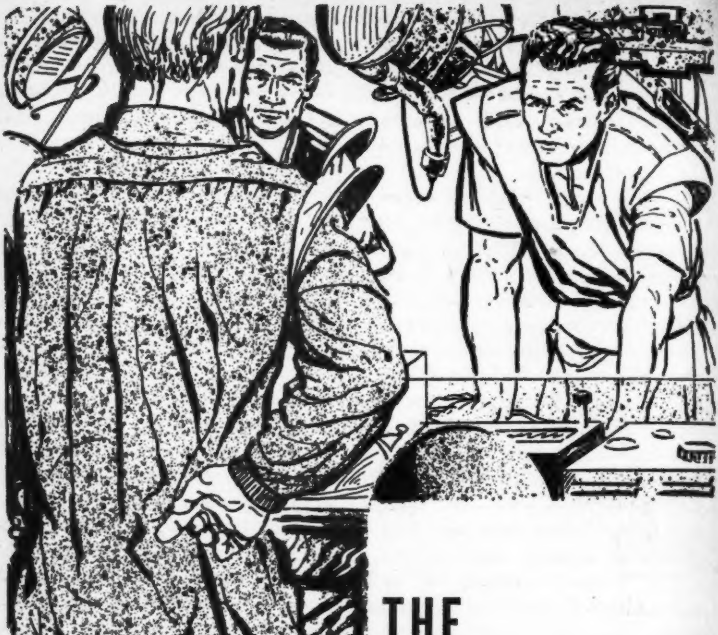
The Scientific Method of logic and careful research is inherently non-ingenious. It's a powerful tool, a magnificent method of refining and perfecting solutions. But it isn't any good at generating the solutions in the first place. Igniting tritium with U-235 followed logically and scientifically; triggering lithium hydride called for trickery. It called for inventors, not scientists—Edison-like intuitive puttering, rather than stolid ranks of trained scientists, backed with computers and data-processing machinery.

Over the last decade, Russia has demonstrated technical ingenuity—and our government has not been at all alert at keeping us informed of that situation. Because ingenuity is one of those purely relative things; you have to have non-ingenuity to compare it with before you can see that it is ingenious. And American science has been pedantically non-ingenious. The only way the United States could call attention to Russian technical ingenuity was by comparing it to our own technical stolidity, which is one of those things one can expect to fall into the class of Things Least Likely To Happen.

Sputnik and Vanguard, however, have called the problem into the open very clearly; it *could* be of immense value to us, because there is no lack of technical ingenuity in the United States. There is, however, a violently acute lack of opportunity for the technically ingenious to break through the stolidity of Organized and Formalized Science. Before blowing your stack and shouting that that's nonsense, try figuring what chance Thomas Alva Edison would have, with his grammar school education, of getting started in modern technical work. Or Goodyear, who solved the rubber problem by spilling some gunk on his stove. Or that portrait painter, Samuel F. B. Morse, trying to tell people that he, a non-scientist, had a highly important technical idea.

Vanguard flubbed disasterously. It wasn't really an important technical failure—but it was an exceedingly important failure-of-attitude. The psychological-political repercussions are enormously important. And they were fully earned, whether we like them

(*Continued on page* 157)



Illustrated by Martinez

# THE MAN ON THE BOTTOM

BY

DEAN MCLAUGHLIN

***It's the higher-up leaders who normally decide on war . . . and the man on the bottom who suffers for it. But these men were* really *on the bottom!***

> *Suppose you're a sergeant machine-gunner, and your army is retreating and the enemy advancing. The captain takes you to a machine gun covering a road. "You're to stay here and hold this position," he tells you. "For how long?" you ask. "Never mind," he answers. "Just hold it."*
>
> *W. L. White*
>
> "They Were Expendable"

DANIAL MASON was weary to his very bones. Although it was years since he had come back from the Moon, he had not completely readjusted to Earth gravity.

Also, there was the work of running the dome, and lately he had lost a lot of sleep over the McKinley Dome trouble. Mostly, though, it was a pure physical weariness that weighed him down.

So he did not rise when Commander John Powell came in and crossed the carpet, offering his hand.

Mason pretended not to see the hand.

"What can I do for you?" he asked, looking up.

He was sitting sidewise to his crescent-shaped, translucent desk, facing the door. Facing Powell.

Powell met Mason's negligent glance with a look of frozen dignity. He knew he was being snubbed, but damn if he'd admit it.

He was a lean, gray, old fighter. His best years were behind him, but he was still in the service of his country. He was like an old horse still in harness, or a grandfather clock that would never stop and never change.

"I am here," he said, "to assume command of this dome's defense."

Mason nodded. He had expected it. He had hoped it would not happen—that events would plunge ahead before it had a chance to happen. But now it had happened and it had to be faced.

"Do you want my permission?" he asked.

Powell bridled. "I thought," he said stiffly, "it would be only common courtesy to call on you."

Mason thought wryly of the man a hundred years ago who had said that when you were going to kill a man, it cost you nothing to be courteous.

"We will expect your co-operation," Powell said.

Mason leaned back. He let his eyes rest on the couch across the room from him, against the wall. He wished he could lie down on it.

"I've been against fortifying the

domes from the very beginning," he said.

Powell was shocked. "You're mad!"

Mason shook his head. "I'm one of the few sane men left in the world. There's two miles of ocean on top of us. If the Africans put a bomb anywhere near us, we'd be smashed as flat as a spit. All the torpedoes and rockets you've got can't stop them."

Powell reddened. "If there's a war, you'll need defending," he said. "Your production would be important to the war effort, and the Africans know it just as well as we do. They'll try to blast this dome and every other dome we've got under the water. Would you rather we let them do their bombing without trying to stop them?"

"You won't be able to stop them," Mason said.

"We have to face realities," Powell said. "I'll grant you—sea domes are vulnerable. They won't be easy to defend. But we have to do the best we can."

"There's just one way to protect the domes," Mason said. "Don't have a war."

"We may have war forced on us," Powell retorted. "It won't be of our choosing."

"I've been following the McKinley trouble," Mason nodded. "But I don't agree the trouble can't be solved."

"We are not," said Powell icily, "a nation of cowards. You forget that the Africans also have domes, which they are just as reluctant to lose."

"There's been a lot said about the advantages of being a live coward," Mason said calmly. "Dead heroes are good for very little besides fertilizer. And statues."

DEEP SEA COMMISSION: (2016-2084) Originally a subcommittee of the World Council, the Deep Sea Commission became a separate body in 2019. As a subcommittee, it composed the regulations under which undersea mineral deposits were claimed, colonized, and governed. As an independent panel, it arbitrated disputes involving the undersea domes and revised the regulations to keep them abreast of changing conditions.

Its ruling in the Bismarck-Magellan dispute—2029—eventually led to its dissolution. This ruling, made at a time when the matter was of only technical importance, modified the regulation by which a dome held claim to all territory within fifty miles of itself—modified it so that where two separate nations had established domes less than a hundred miles apart, the border between the two colonies lay on a line equidistant between the two domes.

When a rich manganese deposit was discovered in the territory of McKinley Dome, the regulation was of sudden great importance. The deposit lay in a zone which was also within fifty miles of South Africa's Jan Christian Smuts Dome, which had been built before McKinley Dome. On these grounds, South

Africa laid claim to the deposit. The Commission was incapable of reaching a solution satisfactory to both nations, and war was unavoidable. (See "WAR OF THE DEEPS")

The War of the Deeps destroyed the Commission's prestige, and robbed it of much of its power. Although it was not dissolved until 2084, authority had passed . . .

Encyclopedia of Solar History
Helmut Altshuler, ed.
Handbuch Verlag, Munich

After Powell walked out, Mason swung his legs back under his desk. For a long moment he let his forehead rest on his hands, trying to drain a little of the weariness out of his bones.

Then, slowly, he straightened up. "Jenny—" he said. "I want to talk to Peter."

The office interphone had no visible equipment. Even its pickups and voices could not be seen. But in the outer office, Jenny heard, and she answered.

"Sure thing," she said, chipper and cheery the way a freckled redhead was supposed to be. "But you got a cable while that chicken inspector was in there."

"Bring it in," Mason decided.

The door opened and she came in with the blue envelope. It wasn't sealed. She stood by while he unfolded the 'gram blank and flattened it on his desk.

He muttered an oath.

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CALVIN OSGOOD, DIRECTOR
CIVIL DEFENSE ADMINISTRATION,
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"Boy, you really blistered that chicken inspector," Jenny said. "He came out like you'd tied a fire on his tail."

"Did you listen?" Mason asked.

"I sure did." In Jenny's office, the interphone was audible only sitting at Jenny's desk. It was a good arrangement. She could listen in no matter who was in the room with her.

"I almost put in my two cents' worth," she said. "You sure let him know he isn't welcome."

"I'd have liked to tell him more," Mason said. He tapped the cablegram. "I suppose you read this."

She nodded. "Uh-huh. Mind?"

"Not at all." Mason smiled. "Sometimes I think you know my business better than I do."

He fingered the cablegram. "What do you think of it?"

"I'm staying," she said. "You don't get rid of me that easy."

"They're right, you know," he said. "It's dangerous. We'll be taking a long gamble, and if I'm wrong, we'll be just as dead as if I didn't try anything."

"You're willing to chance it," she pointed out.

"I've *got* to," he said. "You don't."

She laughed lightly. "Shucks. It's just getting exciting. I'm not leaving *now*."

"What about this?" he gestured with the cablegram again. "What do you think I should do?"

"Don't do anything," she said simply.

He rubbed his temple with the butt of his hand. "It's quite a responsibility to take," he said. "A lot of lives to gamble with."

"Pete agrees with you, doesn't he? And Nick Creston up at Bolivar, and all the rest of them. They're going into this with you, aren't they?"

"I could still be wrong. So far, it's just been an idea to them. They may get cold feet when things get deadly."

"All the more reason you shouldn't do anything about this," Jenny argued. "They'll get this cable, too —and they're probably watching you right now to see what you do, and they'll do whatever you do. And if you ship out all the women, they'll figure you don't have much confidence in your own idea: they won't go along with you."

Mason scowled at the blue paper. Suddenly he handed it to her.

"Take it somewhere and lose it," he ordered.

She smiled. "Good for you, boss."

She turned toward the door, and hesitated. "Boss," she said. "Do you ever wish you were back on the Moon?"

"No," Mason said. "Of course not."

After she was gone, he wondered why he was so sure.

For a man who had never readjusted to Earth gravity, a chair got uncomfortable after a while. He got up, although his legs were heavy and he did not want to stand.

He crossed to the window. There weren't many windows in Wilmington Dome, but Mason's office overlooked the great open space where the ships came to unload their cargoes, and to take on new cargoes of iron billets and processed steel.

It wasn't much different in the burrows on the Moon. The burrows smelted metals from that small world's crust and shipped them across the airless deserts to other burrows where other metals were produced.

But it wasn't the same. None of the metals went to Earth. Not even the most precious metal—maybe not even radium—was worth the expense of shipping it to Earth. The metals produced on the Moon remained on the Moon, supplying the needs of the colony there. Earth had to supply its own needs, and the sea domes were the way those needs were supplied.

Maybe that was the reason—the reason he preferred to be here.

Men might be going to other worlds now, but Earth was still the most important. It was still Man's home, and most men still lived there.

He watched the work down on the

docks. The long, sluglike submersible freighters lay two by two in the slips, their cargo hatches open, dark water showing under their bodies.

The freight handling machines worked over the ships like giant surgeons, lifting out the large shipping-packs of foodstuffs and machine parts and the lead-package slugs for the power pile. He watched the loads of steel and iron put gently in place.

"I've got him," Jenny's voice came suddenly.

Mason turned and went back to his desk. He let himself sink into his chair. It was soft for a moment before it became uncomfortable again.

A gray cloud formed in the space between the desk and the door. It quickly took on shape and color. Mason turned to meet Peter Kumalo.

Kumalo sat with his desk behind him, his long legs crossed. The desk looked strange. It seemed to be made of woven reeds and staves, as primitive as farmland and bush country.

Kumalo himself was as black as a bittersweet chocolate bar, and he wore a singlet, trousers, and sandals. His teeth were ivory and the whites of his eyes were like asbestos. He smiled.

"Danial. My good friend," he said. He had a deep, marvelous voice.

Mason nodded. "Peter—" he said. "Welcome to Wilmington Dome."

"Alan Paton Dome is your host," Kumalo replied graciously. He smiled. Then he stopped smiling. "The war will start soon."

"Yes," Mason said. "We just got a warning. It looks bad."

"Do you think I ought to tell my people?" Kumalo wondered.

Mason considered. "I think you should," he decided. "And say it so they'll realize how easy a bomb can flatten a dome."

Kumalo moved uneasily. "Why do you say that?" he wondered. "About the bomb, I mean."

"Your people are in for quite a shock," Mason told him. "They'll take it a lot more quietly if they know it's the only thing to save their skins."

Kumalo relaxed. "I do not know the way of things in your dome," he said. "But I do not have that problem. To my people, I am the chief—their *'umfundis'*—and they are my people. But I will do it—" he decided. "It is better if they like the things I do."

Mason smiled shrewdly. Kumalo smiled back.

"I've got a problem," Mason said suddenly. "The navy's sent a man to take over the defense installation. I don't know what to do about him."

Kumalo's face was blank and solemn. He did not move on his stool. His hands rested sphinxlike on his thighs.

"I do not have that problem here," he said. "I cannot tell you what to do. But you must get rid of him."

"I had that figured out a while ago," Mason said wryly. "Now tell me how."

"That is what I cannot tell you," Kumalo said apologetically. "You will have to lay your own plans. Knowing you, it will be a good plan."

"Glad someone has some confidence," Mason put in.

"However, I suggest you do not be hasty," Kumalo went on. "If you remove him too soon, you will expose yourself. Keep him ignorant of our plans, but do not touch him."

"And then make him just one more thing to tick off the list," Mason finished. "Well, it makes sense."

"One more thing," Kumalo offered. "Do not kill him. A live man is useful at times; a dead man is not."

Mason nodded. "He might make a good bargaining point."

Kumalo's eyebrows lofted. He was puzzled. Then he shrugged a smile. "Something," he said, "I do not understand." He shook his head. "I will never understand you Americans."

"Sometimes I don't understand them myself," Mason said. He leaned against his desk and rubbed his forehead. He was tired. He wondered what he should do about Powell.

"You look tired, Danial," Kumalo said solicitously. "You should get more sleep. Tomorrow might be the day. You should be rested."

"Yes—it might," Mason said woodenly. He hadn't realized his fatigue was so obvious. "I've got to think—"

"I am sorry my country will make war on your country. I am ashamed of my country."

"It's not your country," Mason said strongly. "And it isn't mine, either. We settled that a long time ago."

"The tongue has old habits," Kumalo nodded. "And it was my country—once."

"They disowned us," Mason said. "They don't know it yet, but they've disowned us."

"Yes." The word hissed between Kumalo's teeth. "I would not have believed it if you had not shown me—Danial, my friend."

He sat silent a moment. There was nothing more to say.

Kumalo made a gesture. "Stay well, my friend—Danial."

"Go well," Mason nodded solemnly.

Kumalo was gone.

Mason breathed in deeply and turned back to his desk. He rested his weight on his forearms. He felt dead, leaden, lifeless. "Jenny," he said. "Get Joe Kramer."

"On the wire?" She was surprised.

"No," Mason said quickly. He hesitated. "Not here, either. Tell him to meet me in the coffee hall."

"The coffee hall?" Jenny echoed critically. "Isn't that sort of public?"

"Yes," Mason admitted cheerfully. "Almost as public as here."

*WILMINGTON DOME lies seven hundred miles off the South American coast, due east of Buenos Aires, at a depth of nine thousand feet. One of the largest steel-producing domes in the world, it specializes* *in shipbuilding and dome prefabrications.*

*It was here in 2047 that the great Danial Mason made his desperate gamble to end the War of the Deeps, and until McKinley Dome was rebuilt in 2052, it . . .*

*Robert Evans,*
"The Sightseer's World"
Vagabond Publishers,
New York

The coffee hall was a convenient place to meet people. Joe Kramer was three levels down from Mason in the hierarchy of Wilmington Dome. He could not be called to Mason's office without the men between finding out.

It just wasn't done. It would cause talk. The news would get around, and it would be known the meeting was business. Embarrassing questions —if not asked—would be wondered about.

The coffee hall solved the problem. They could be just two men who knew each other, passing casually the time of day.

The hall was near executive country, but anyone could go there. Off in a far corner, a group of off-duty Navy men from the battle control station sat around a table. Ships' officers off the freighters sat over lonely cups and doodled on napkins. Office girls perched in groups and gabbled back and forth.

But it was a quiet time of the day, and most of the long hall was empty. Only one of the large coffee urns was operating. Mason waited for Kramer, patiently stirring his coffee. His nearest neighbor was twenty feet away.

He didn't have to wait long.

Joe Kramer went first to the coffee urns. He put his ticket in the slot and drew himself a steaming cup and took a wedge of pie from the dispenser. Then he turned.

Mason made a sign to him, in case there was anyone watching. Joe nodded to the invitation and came over, the thick cup gripped in one fist and the pie plate in the other.

He was a big man—tall, broad-shouldered, muscle-lean. He weighed two hundred thirty pounds. His broad mouth was solemn.

"Hi, Chief," he said.

He set his cup and pie down across the table from Mason and sat on the stool.

"What's on your mind?"

Mason gestured with his coffee. "The Navy's sent a man to take over the battle control station."

Kramer cut off a bite of pie and then forgot it. "What are you going to do about it?"

When Mason said nothing, he leaned forward. "Me and the boys could clean the place out in five minutes if you gave the word."

"No," Mason said.

Kramer frowned. "Why not, Chief?" He glanced covertly toward the Navy men at the far end of the hall. "You don't think they'd make any trouble, do you?"

He chuckled. He leaned back expansively. "Hell—let them get the whiff off a burp gun and they'll yell for their mamas. They won't give no trouble."

But Mason shook his head. "Joe," he said. "I don't want any bloodshed."

Joe Kramer looked up scornfully. His black brows jutted fiercely. "You won't get far saying 'please.' "

"We'll do it my way," Mason said calmly. He raised his eyes to meet Kramer's solidly.

Kramer shrugged. "Well, all right. If you say so, Chief."

He waited.

Mason leaned his weight on the table. He stared down at his coffee. It was still steaming.

"I'm not sure how we'll do it," he said. "I may need your men—probably. Do you think they would back me up?"

"I sure hope so," Kramer growled. "We're cooked if they don't."

Mason made a putting down gesture. "I don't mean just stopping a riot if it starts," he said. "I'm wondering if they'd back us against those Navy men. Those sailors aren't going to like what we do, and it'll be up to your men to keep them under control. Will they do that?"

"With burp guns, sure," Kramer said.

"With baseball bats," Mason told him firmly. "I don't imagine those sailors carry sidearms."

"If I tell them to," Kramer said grudgingly. "But they'd be a lot more willing if they had burp guns."

"No," Mason said stubbornly. "Give them guns, and they'll want to use them."

"There's times you've got to use a gun," Kramer said.

"And there are times when you definitely must not," Mason told him. "This is one of those times."

The dome's loud-speaker system came to life. It was amazing how quickly the almost inaudible hum of the suddenly live instruments abruptly silenced every voice in the hall. Men and women lifted their heads to listen, and hardly anyone breathed.

*News bulletin!* a voice barked tersely. *News bulletin!*

And then another voice came.

*This is Panama,* it announced, as if the fact had a grim importance.

*The talks between Executive Ambassador Diego Sierra and South African Foreign Minister Tikloshche Van Vliet have been broken off.*

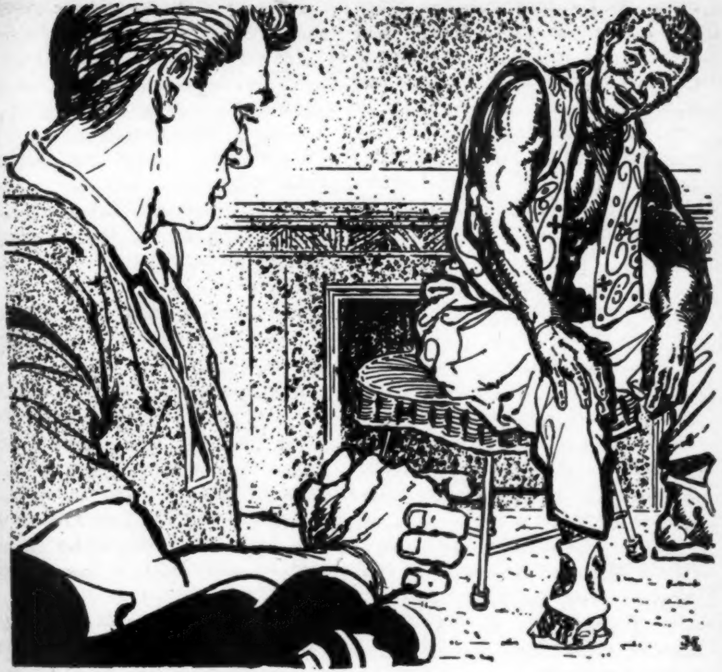
There wasn't another sound in the hall.

*Immediately following the breakup of the talks, the South African delegation boarded a plane for Johannesburg. The delegates refused to make any statement to the press. Asked if talks would be resumed at a future date, Executive Ambassador Sierra said, "It's up to them. We are willing to meet them any time."*

Kramer made a noise like the growl of a sleeping hound. "Why don't they just say it?" he muttered. "It's war, isn't it?"

Mason nodded heavily. "But it isn't polite to say it out loud," he said.

The loud-speakers yammered endlessly.



*No one seems to know what will happen now. Here in the capital, the general attitude is one of waiting. The next developments are very definitely in the hands of the South Africans.*

Mason squeezed himself into a booth. He rang the cable room. Floyd San Martin, the duty operator, answered, the hum and pinging of electronic gear behind him.

"I want to send a cable," Mason said.

"You may dictate," San Martin said. "The tape is ready."

Mason took a breath.

"From Danial Mason, director of Wilmington Dome for South Atlantic Mining. To Executive Ambassador Diego Sierra, Office of Diplomatic Relations, Panama City."

He paused, to phrase the cable in his mind—to take another breath. Then he spoke.

"Message: We are distressed by the breaking off of talks between your office and the South African Government. We are convinced that unless this situation is changed there will be war. We in the undersea domes cannot survive a war. We urge you to persuade South Africa to reconvene talks, even if you have to make concessions. If the talks are not continued and unless a peaceful settlement of your differences is achieved, we are dead men. End of message."

"Do you think he will do anything?" San Martin asked, blindly hopeful.

"He paid no attention to the others we sent him," Mason said truculently. "He'll probably never even see this one. Some office boy will chuck it in a wastebasket."

"But no!" the cableman protested. "It is too important."

"That doesn't make any difference," Mason told him. "They've gone too far in Panama to back down now. It's perfectly possible to be aggressively obstinate, you know."

As an afterthought, he added, "It's been heading for war from the beginning. The Africans want the McKinley manganese deposit, and Panama won't give it up. All the talking's been nothing but sham—while the navies got ready for war."

"I see," San Martin murmured dispiritedly. "This cable — is it charged to the company account?"

"Yes," Mason said. "Put it on the company account."

"Do you think they will bomb us?"

"I hope not," Mason said. "There wouldn't be anything left of us."

Next, Mason called his office. Jenny answered.

"Jenny—?"

"Oh. Hi, boss. What's up?"

"You heard the news bulletin?"

"How could I miss it?" She sobered abruptly ."Sounds bad, doesn't it?"

"It is," Mason told her grimly. "It means South Africa's ready for business. McKinley's due for a bomb any minute."

"Oh, gosh!" She sounded scared.

"Here's what I want you to do," Mason said. "Call Peter. Tell him to pass the word to Smuts Dome to evacuate McKinley. Then get on the direct wire to McKinley and tell Carlos to have his bags packed. Don't talk to anyone but Carlos. And if they've sent a Navy man there like they did here, tell Carlos knock him on the head and take him along."

"Will do, boss," she promised. "Right away."

"We may be too late as it is," Mason said.

Joe Kramer had demolished the pie when Mason came back. Only a few smears were left on the plate. Mason sat down. His coffee had stopped steaming. He sipped it. It was cold and undrinkable. He pushed the cup aside.

"I hope they get out in time," he said. The taste of the coffee was hard in his mouth.

Joe Kramer shrugged. An Arab might have murmured *Kismet;* a devout Christian might have thought

*Thy will be done.* Joe Kramer shrugged.

He leaned back until Mason thought he would topple backward off his stool. "You've got 'em eating off your hand," he said delightedly. "Look."

His expansive gesture included the whole room. The loud-speaker had been silent for some minutes, but the room was still quiet. Everywhere were worried faces, and those few who talked spoke in low, sober voices.

"You were real wise, putting news on the PA," Kramer grinned. "Look at 'em—sacred as chickens! I bet you could run the reel off right now, and they wouldn't raise a peep."

Mason nodded. "Maybe," he said. "But we'll wait. We can't do anything until the war starts."

He leaned forward, as if to rise. Then he sank back. He leaned his weight on the table. He shook his head groggily.

"Joe," he appealed. "Would you get me a coffee? I'm so tired I can't even stand."

*McKINLEY DOME: Located on the southern slope of Romanche Trench at a depth of twelve thousand feet, nineteen hundred miles off the coast of South America. Its mine and smelter complex produces several of the rarer metals, cadmium and molybdenum being the most important.*

*Its satellite, Mason Dome, is one of the world's major sources of manganese.*

*Destroyed in the War of the Deeps, McKinley Dome was rebuilt and in 2053 became . . .*

Coons' *Dictionary of*
*World Geography*
Phalarope Press,
Capetown

McKinley Dome got it the next day.

It had been obvious from the beginning that McKinley would be first to be bombed. It had also been obvious there would be nothing left. At a depth of two miles, the shock wave of a fission bomb could smash anything men could build.

Mason was on the private wire to Carlos Nasjleti, the director of McKinley Dome for La Plata Minerals, when it happened.

The evacuation, Nasjleti told him, was seventy per cent complete. Although it had not been possible to hold practice drills, nor even to tell the people ahead of time of the evacuation plans, no serious difficulties had come up. Everything was happening smoothly.

A few had boggled when they saw that some of the evacuation ships were manned by black skinned men. But the fear of a bomb and of the smashing sea was stronger than any hate of Africans they might have held. Not understanding, but thankful for their deliverance—no matter into whose hands—they were boarding the ore ships which had been crudely rigged to take passengers in their capacious holds.

"A few of us will stay," Nasjleti

said. "Enough to keep my dome alive. Twenty."

"You'll be bombed," Mason warned. "You know that."

"We will be bombed," Nasjleti agreed. "We want to stay. There must be someone here to let the last ship out. And if the cable is maintained, no one outside will know we have evacuated."

"You can make it look like the cable blew," Mason argued. "And you can rig the locks so the last ship can get out. I thought we had it all planned."

"I think it is better this way," Nasjleti said calmly. "Do not argue. The bomb may come before we finish the evacuation, no matter what we do. They tell me from Smuta Dome they have been ordered by their Navy to keep all their craft away from us. I think—"

He broke off. "A moment," he apologized. There was a brief silence.

Then he came back. "There are some ships approaching us," he said matter of factly. "They are not ours. They do not—"

That was all.

Mason leaned his weight heavily on his desk. Dead silence clogged the office.

Carlos had been a good guy. And there had been a lot of people in McKinley who didn't get away.

He felt a little sick.

"Jenny," he said. He spoke loudly. "Jenny."

"Yes, boss" she responded brightly.

She couldn't have been listening in on his talk with Carlos.

"Ring up the Geophysics office," Mason said. "I want to talk to Pedro."

She sensed something. Maybe it was the tone of his voice.

"Something happened?" she asked apprehensively.

"I think they got Carlos," Mason said.

She didn't say anything. She put through the call to Geophysics.

Presently, Pedro Cardoza came on. "What can I do" he offered.

"Check your seismograph," Mason told him.

"What should I look for?" Cardoza wondered.

"Just check it," Mason said. "And tell me what you see."

"I will call you back," Cardoza said.

"No," Mason said. "I'll wait."

While he was waiting for Cardoza to come back, he spoke to Jenny. "Get the cable room," he said. "I want them, too."

Bill Krumbein was on duty. That was a break. Krumbein knew all about Mason's plans. In fact, he had managed the laying of the secret cable that connected Wilmington Dome to Alan Paton. Nothing had to be hidden from Krumbein.

"Bill," Mason said: "I want you to check the cable to McKinley. I think they've been bombed."

"War?"

"That's how it looks, Bill," Mason said. "Call me back."

Pedro Cardoza came back. His

voice was full of cold amazement. "There has been a fission bomb explosion," he said.

"Where?" Mason said.

"North," said Cardoza. "Not more than ten degrees west of due north. And on our sima mass. I do not know how far. I think two, three, four thousand miles. I would have to calculate."

"Don't bother," Mason said. "That's close enough. Thanks, Pedro."

"But it could be anywhere!" Cardoza cried in protest.

"The compass bearing is plenty," Mason said. "It was McKinley Dome."

He started to cut off, but Cardoza said, "Is it war?"

"I hope not," Mason said. It was an answer he had decided long ago to give to all such questions. "We'll be dead if it is."

This time Cardoza did not stop him when he reached to touch the disconnect knob.

He waited for Krumbein to call back. He leaned his weight on the desk and tried to rest. Across from him, against the wall, the couch waited invitingly. It looked soft and able to take the load of gravity off.

He wished he could go over to it and lay his leaden bones on its soft upholstery. But he couldn't. Not now, of all times.

Krumbein called back. "I couldn't raise them," he said. "Couldn't get any farther north than Bolivar."

"That clinches it," Mason said without satisfaction. "They've been bombed."

Krumbein swore. "Hell of a thing to happen," he said. "I knew some of those guys. I guess they're gone now."

"I want to send a cable," Mason said.

It seemed a very irreverent and ill-timed thing to say, but Krumbein reported, "Ready down here. Let's have it."

"I want this sent to all domes," Mason said. "You set up the letterhead—Message: Looks like war. Be prepared. Wait for word.—That's it."

"Send this to all the domes?"

"All the American domes," Mason qualified. "You know what we're trying to do."

"It'll go out right away," Krumbein promised. He hesitated. "Say—a cable came a while ago—maybe you'd be interested. It was for that Navy jerk."

"What did it say?"

"I've got a copy of it here some place," Krumbein said. "Just a minute."

There was a silence while Krumbein looked for it. Then, "It says: 'Intelligence reports South African fleet at sea, prepared to attack. Expect you to defend your post as long as possible.' That's all of it. It isn't signed—just a bunch of syllables that don't make sense."

"Thanks," Mason said.

"Sounds bad, doesn't it."

"Translated," Mason said grimly, "it means die like a man; we who will go on living salute you— If any more cables come in, give them to me."

"Sure thing," Krumbein acknowledged. "You want me to send those cables now?"

"Just one more thing," Mason said. "Keep watch on the entertainment wire for a news bulletin about McKinley. I'll want it flashed on the PA system right away."

"If we can do it, we'll put it on straight," Krumbein said. "We won't fool with the tape."

"That would be fine," Mason approved, and signed off.

"Who do you want next?" Jenny asked.

Mason hesitated only a moment. "The chicken inspector."

Jenny made the connection.

"Battle control," a voice reported.

"I want the big man," Mason said. "This is Mason."

"I'll tell him, sir."

There was a pause. Then— "Powell speaking. What do you want?"

Some things he could tell. Some things he couldn't. Quickly, Mason sorted them in his mind.

"Our seismographs picked up an earthshock a while ago," he said. "It has the marks of a fission bomb. And McKinley Dome's cable is shut. I think they've been bombed."

"You have nothing to worry about," Powell said. "My men are on duty. The Africans will bomb us only at great cost to themselves."

"I had some friends at McKinley," Mason said.

"Mr. Mason," Powell scolded. "This is war. We have to accept those things."

Mason didn't answer. "I'll be down after a while," he said finally. "If anything happens, I want to be there."

"We're perfectly able to defend your dome without your presence," Powell said.

"I'll be there," Mason repeated, and broke the connection.

"Now," he told Jenny, "the PA system."

"It's already live," she answered.

"Bless you. Put me on."

"All yours, boss."

Before he spoke, he took a deep breath and let the things he wanted to say take shape in his mind. Then he leaned his weight on the desk.

"This is Mason," he said, and through the walls he heard his voice reverberate from the PA speakers.

"We have reason to believe—" He paused, and began again. "We have reason to believe McKinley Dome has been destroyed by a fission bomb. We don't know anything definite yet. We're in no immediate danger, here, but we don't know how long that will last. We'll try to keep you informed."

He touched the cutoff and propped his head on his hands and closed his eyes. He tried to imagine how it would be if a bomb came—if the dome broached and the sea fell on it and tore it to shatters. It would only take seconds. Maybe he wouldn't even know how he died.

"That was beautiful, boss," Jenny

said. She chuckled. "No immediate danger! You'll have the wits scared out of them."

Mason straightened up wearily. "That doesn't mean I have to like it," he said. "I don't like playing tricks on my own people."

It was oppressively quiet in the room. Too quiet.

The dome had always been full of sound. Its framework had trembled with it. The roaring furnaces; the rumbling steel mill; the subterranean grumblings of the mine; the bustle on the docks . . .

The dome was under threat. The sea pressed down on it. Disaster could strike from the water in an instant: a rocket dropping out of the sky; a tin fish from beyond the horizon; a globe dropped from a passing ship—

Men waited for their death or their salvation. They left their work—went home to their apartments—to be with their wives and their children. The work of the dome ground slowly to a stop.

In his office, Mason swallowed a waker pill and sipped a glass of water. It wouldn't make him feel any less weary, but it would keep him from drowsing. This was no time for a sluggish mind.

He tried to ignore the couch over by the wall.

"Get me Peter," he told Jenny.

While he waited for her to make the connection, he shut his eyes and tried to rest. The pill hadn't taken effect yet; his mind turned fuzzy and numb. He pulled himself out of it with an effort.

Then Jenny came through, and Peter Kumalo and his stave-and-reed desk appeared in the space between Mason's desk and the door.

His face was grave.

"I was going to call you, Danial," Kumalo said. "It has started."

Mason bowed his head. "What have you heard?"

"Jan Christian Smuts Dome felt the bomb," Kumalo said. "It was not damaged but they felt it. Some of their ships were in McKinley Dome when it was destroyed, and one that was going there was also lost. And instructions come to me from Johannesburg that the war has started; I am to alert my detect-and-destroy units; we might be attacked."

He looked unhappy. "I am sorry my country makes war on your country."

Mason gestured a demurral; no apology was needed. "Any word on how many got out?" he asked.

"John Msimangu said to tell you almost all the children and women are safe—all but those who chose to stay with their men. And most of the married men are also safe. But I have no numbers. There has been no count. Jan Christian Smuts Dome is very crowded."

"Well, give thanks for the ones that were saved," Mason said. "Any preference for when you make the next move?"

"When it is best for your purpose, we will do it," Kumalo assured him.

"Better make it soon," Mason decided. He glanced at his watch. It said 9:15. What time have you got there?"

Kumalo glanced away, to a clock Mason could not see. "It is one thirty-five," he said.

He saw the puzzled look on Mason's face. "We keep Johannesburg time," he explained.

Mason comprehended, nodded, and smiled. "We'll have to change that," he said. Then he was all business again. "All right—pass the word: African domes take the step at two o'clock. We'll be, maybe, a couple of hours behind you."

"As you wish, Danial."

"If we get bombed, you're on your own," Mason said. "Do what you think's best."

"I will do it at two," Kumalo said. He made a sign. "Go well, my friend," he said.

"Stay well," Mason nodded. "Stay well—Peter. Good luck."

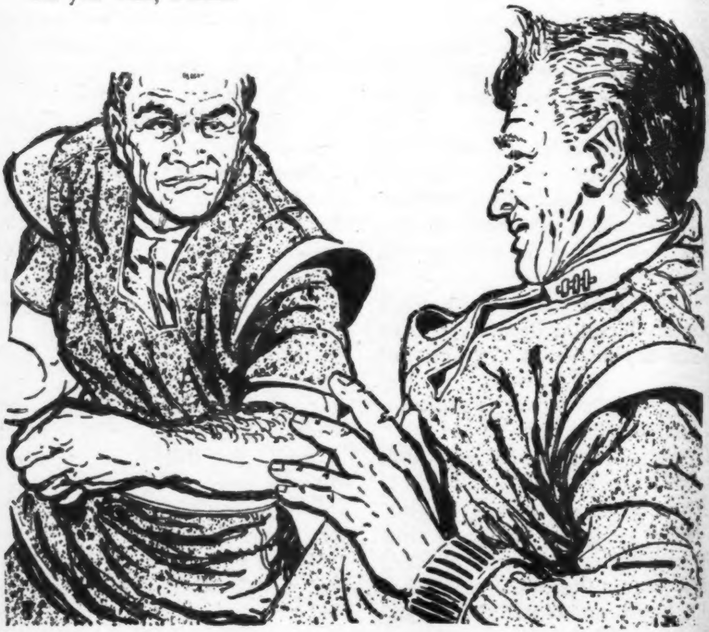
Kumalo was gone.

"Joe's chewing the wire, boss," Jenny reported.

"Let him through," Mason said.

"Don't say I didn't warn you," Jenny said, and let him through.

"Chief" Joe Kramer blurted.



"What's the idea? The first I hear, you're blatting it all over the dome."

Mason cut short the complaint. "Have your men reported in?"

"All but one," Kramer said. "And he's sick. But all kinds of trouble could have come up. You should've tipped me off."

"*Did* any trouble develop?"

"Well, no," Kramer admitted. "The boys say it's just like you'd stuck spigots in everybody and took the blood out. You never saw such a bunch of funks in your life."

"Well, if there wasn't any damage done," Mason suggested, "suppose we get on with the business. Have you got your ten-squad picked?"

"Picked and itching," Kramer assured. "And the rest of the boys are on post. As far as me and the boys are concerned, you can push the button any time."

"Good," Mason said. "Better get the ten-squad staked out. I'll be down in a few minutes."

"We'll be waiting for you," Kramer said.

"Stay out of sight," Mason reminded him. "And remember, I don't want any bloodshed if we can help it."

"I still think a burp gun's a good idea," Kramer said.

When Kramer had signed off, Mason said to Jenny, "You listened?"

"Uh-huh," she answered. "Sounds like you can go ahead any time."

"So far as Joe's concerned," Mason said, nodding absently although there was no one to see him nod. "I'd like to wait until my people hear the news from Panama, though, if it doesn't take too long coming."

"I don't see why you have to wait, boss," Jenny said. "Joe says they're ripe right now."

"I'd like them to know this isn't just something I made up, Jenny," Mason said. "I've done a very terrible thing—I've crushed and stamped the spirit right out of my people, just so they'll let me do a thing they'd never ordinarily let me do. Is that right, Jenny?"

"Sure it is, boss. You've *got* to do it."

"Thanks, Jenny," he said humbly. "But— No . . . it isn't right. It's just the only thing that will save us."

As he was leaving, Jenny stopped him in her office.

It was Krumbein calling from the cable room.

Mason slipped into Jenny's chair to take the call. The chair was too small for him, and it was hard. He couldn't understand how she could stand it.

"We got a cable for that Navy jerk," Krumbein said.

"What does it say?" Mason tried to find a comfortable way to sit on the chair, but there wasn't any comfortable way.

Krumbein read the cable. "Subcruiser *Quito* and two subdestroyers being rushed to your defense. Will reach you afternoon of 27th."

Mason's respect for Jenny had increased considerably. He wished he could feel rested. He wished he could be comfortable. Having been on the Moon took a lot out of a man.

"That's two days away, isn't it?" Krumbein said.

"Lot of help they'd be," Mason muttered.

"Should I let the old buzzard have it?" Krumbein asked.

"Go ahead," Mason told him. "It ought to loosen him in his boots a little."

Gratefully, he got up from Jenny's chair.

Wilmington Dome perched on the spur of a mountain two miles under the sea. Beneath it, the mine tunneled deeply into the rock.

All around it, cables snaked out like nerve threads from a ganglion. Some were communication cables, linking Wilmington to other domes and to the mainland. Others went only a little way.

On the mountain's crest, two skeletal towers rose. One was the sonar beacon which guided ships in to the dome. It was silent now.

The other was also a sonar, but it was the one by which men in the dome could watch ships approach and, if necessary, communicate with them.

Far above the dome, on the weather-swept surface, the radar raft tossed and tugged at its three anchor lines. It was a part of the world-spanning system which watched the flight of planes, and knew it the instant something was wrong.

Ringed around the dome—some of them as far as ten miles away—torpedo and rocket emplacements pointed their prongs upward, armed to strike at a signal from the dome. They could not stop a determined attack, but they could make it costly.

Determined that things would never come to that, Mason approached the battle control station. Joe Kramer leaned out of a compartment and motioned him inside.

In addition to Kramer, there were ten men in the chamber. Company police. They had pistols clipped to their waistbands, and one man had a knife, but there wasn't a burp gun in sight.

"All ready here?" Mason asked.

The men nodded. They looked ready. They were sober, capable-looking men.

"Just say the word," Kramer grinned.

"Wait till I call you in," Mason said.

"What if something goes wrong?" Kramer hazarded. "We never did settle that out."

"We'll settle it out right now," Mason said. "I don't think anything will, but if you see something has—yes, move in. Otherwise . . . What time have you got?"

Kramer looked at his watch. "Twenty to ten."

Mason checked his own watch. Then he said, "If I haven't called you by half past, take over. Something will have gone wrong."

"Got you," Kramer said.

Mason spent several minutes looking around the battle control station, getting to know the place. He hadn't been down there since it had gone into service, and although he had studied plans and diagrams carefully, there was nothing like knowing the place first hand.

The room was medium-sized, but long and narrow. Rows of tall, switch- and dial-studded panels lined the long walls. They were set at an angle to the walls, like saw teeth, set so that the men who stood at ease facing them were also facing the far end of the room.

Two men, near the door, had guns. They were guards.

Powell was at the far end, seated at a console on a raised platform. His back was to the room. In front of him, the wall was a green-glowing screen marked off in concentric circles which radiated from the center. Between Powell's console and the screen, set down in a pit below the level of the floor—like an orchestra—the radar-sonar operators sat at their control boards.

The room was quiet. The men were crisp efficiency. They waited, as deadly as steel.

After one brief tour of the room, Mason retreated back almost to the door. He stood just in front of the two guards. Powell had told him to stand there, where he was out of the way.

It was a nasty set-up. Powell was at one end and the two armed guards were at the other. Mason hadn't expected the guards. Powell was the man to get, but the guards would stop him if he tried.

A weary weakness filled his body. He would have to fall back on Joe's men after all. He wished they weren't carrying guns.

The PA system hummed and came alive.

*News Bulletin!* it boomed. *News Bulletin!*

There was no speaker in the room, but it leaked through the calls and through the door which Mason had left ajar when he came in.

The waiting was over. He could go ahead now.

Another voice broke from the speakers.

*This is Panama,* it declared. *President Goyartuga has just announced that ships of the South African Navy have bombed and destroyed McKinley Dome. The bombing took place—*

"Contact!" one of the sonar men called out, sharp and clear.

On the green tinted screen, a red spot appeared in the upper left quadrant. It was high, and just inside the outermost circle.

Powell looked up. "Track it."

*President Goyartuga has called a meeting of his top advisors, including representatives of all major parties . . .*

"On track!" another sonar man sang out.

Powell still watched the red spot. "Continue search," he ordered. "There may be more of them. Units one, two, three, and five, lock into the track."

The men at the front-rank panels

went to work—one on the right-hand side and the first three on the left.

*. . . Members of the armed forces on leave have been recalled. Civil Defense regulations are now in force. All citizens are requested . . .*

On the screen, four blue spots appeared, one by one. They were close to the center, one to the right of the north-south axis, the other three on the left.

The red spot didn't seem to move.

"Flash them an IFF," Powell ordered. His eyes didn't leave the screen. "Unit seven lock in."

*. . . Only yesterday that the South African delegation led by Tikloscbe Van Vliet returned to Johannesburg after being refused their demand that the manganese-rich ore deposit near McKinley Dome be surrendered to South Africa's Jan Christian Smuts Dome—*

"Mason! Can't you shut that thing off?" Powell snapped impatiently.

Mason didn't answer. He turned and nodded to the stiff-faced guards and passed between them to the door. He looked outside. The corridor was empty and dimly lighted. Leaving the door open, Mason turned back into the room.

"No IFF response," one of the sonar men sang out.

"Give it to them again," Powell ordered.

Mason heard a small sound in the doorway. He didn't turn to see. He threw himself at one of the guards.

*. . . Goyartuga has called a special session of the Grand Assembly to meet tomorrow morning. He will ask approval for his Proclamation of War. In the meantime, a Navy source close to the President says that all Naval units have been ordered to attack and destroy South African craft wherever they are found—*

Joe Kramer got up from the other guard. He snatched up the guard's gun. The guard was out cold.

Mason's guard was still conscious, but he was thoroughly occupied with a broken arm. Mason got to his knees —started slowly to rise.

Kramer's men were moving purposefully past him. They hadn't drawn their guns. The way they marched double-time down the length of the room made it unnecessary.

The Navy men, turned from their panels, flat-footedly let them come. They let Kramer's men crowd them down toward the end of the room like sheep.

Powell was standing up from his console, staring down at the confusion.

"Mason!" he demanded. "What's going on here?"

Mason got to his feet. He clipped the guard's gun to his sash. Slowly, he started toward the far end of the room. He was amazed how much the ten-second struggle with the guard had taken out of him.

"Mason!" Powell insisted. "Answer me!"

Kramer was already halfway there. "Come down off of there," he said loudly.

Suddenly, Powell understood.

"This is treason!" he blustered. "Treason!"

He spun back to the console, looked up at the screen, and reached for the control board.

"Don't touch it!" Mason shouted desperately. "You'll just get us bombed. It won't do any good."

Powell froze for the one necessary instant while Kramer ploughed through the crowd in front of the platform and bounded up behind him. The big man wrapped his arms around Powell.

Powell struggled, but it wasn't much use. "Relax, pop," Kramer advised.

"This is treason!" Powell raged. "I'll see you hang! Treason!"

Mason pushed through the crowd. No one tried to stop him. The Navy men were as docile as cattle.

He stepped up on the platform. "Not treason," he said mildly. "Rebellion. We're declaring our independence from the American Union."

He turned to look down over the crowd. Kramer's men had the sailors herded tightly together at the foot of the platform.

"Get them out of here," he ordered. "Put them on ice."

Kramer's men herded them back toward the door. They went unprotestingly. Mason saw the two guards pulled to their feet and walked outside.

He turned back to Powell. The commander was still struggling in Kramer's arms, trying uselessly to get free. Kramer wore a big, self-confident grin.

"You, too," Mason told Powell, nodding toward the departing crowd. "I'm sorry—there's nothing personal in this. It won't look good in your record, but I can't help that. At least you'll be alive, so your record will mean something."

Kramer released the man and gave him a shove. Powell stumbled down off the platform. "You heard him, pop," Kramer said. "Get going."

Powell got to his feet and came back, arms flapping ineffectually, like a fighting cock. He tried to get past Kramer to the console. Kramer stopped him with a fist in the belly that doubled him over.

Kramer gave him a shove that sent him backwards off the platform. He bumped on the deckplates and lay, doubled up, contorted with spasms, on his side.

"Schwartz. Gallegos," Kramer called.

Two of Kramer's men turned back.

"Drag this thing out," Kramer ordered.

"Carry him," Mason countermanded. "Be easy on him. And call down a doctor to look at him. The man with the broken arm, too."

He shook his head sadly. "Joe," he said. "You shouldn't have done it."

The men bent and lifted Powell. They were inept, but they tried to be gentle. They struggled with their burden to the door.

Kramer nudged Mason. "What about them?"

He nodded to the men in the pit between the console and the screen.

They had left their instruments. They stood looking up at Mason and Kramer.

Leaderless, they didn't know what to do.

Mason leaned over the console. "Back to your posts," he ordered. "I want to see what that ship out there is doing."

"Why should we?" one of them snarled defiantly.

"Because I think you want to know, too," Mason said calmly. "And because your lives may depend on it."

"Is that a threat?" the same man demanded.

"No," Mason answered reasonably. "But that ship out there is. Your commander and I didn't agree on how to deal with it, but it will have to be dealt with. Now get back to work—all of you."

The man who had been doing the talking spat deliberately on the deck. He smeared the spit under his heel and looked up at Mason. Mason met his eyes steadily.

The man shrugged and sat down at his post.

The other men, with no other leader to turn to, returned to their posts. They were uneasy, but they didn't know what else to do.

Mason looked up at the screen. The red spot didn't seem to have moved. The ship it signified was still a long way out—it would have to move quite a distance before the movement would show on the screen.

He turned back to Kramer.

"You shouldn't have been so rough on him," he said.

"Who?" Kramer said. "That old rooster?"

Mason nodded. "He's an old man," he said sharply. "You could have hurt him pretty bad."

"Hell!" Kramer complained. "He was going to shoot off something. I couldn't let him do that, could I?"

"You could have stopped him without almost killing him," Mason snapped.

He changed the subject. "When your men are through locking up the prisoners, send them after the relief crews."

"O.K., Chief," Kramer said. He stepped down off the platform and stumped out.

Mason sat down at the console. The control panel was divided into four sections. Red lights gleamed over five sets of switches in the upper division—one on the right and four on the left. The panel was a very easy one to understand.

If he had to, he could operate it.

He looked up. The red spot was still where it had been—or maybe it had crept a little in from the edge. Toward the dome. He couldn't be sure.

He searched the panel from one end to the other for the controls of a phone. Surprisingly, there were none. The console should have had a phone built into it. Nothing even remotely resembling a desk was built without its phone.

But he couldn't find one.

The only phone he had seen in the

room was at the other end, near the door. It was one of the long-obsolete type which military establishments still insisted on using—one with a hand unit mouthpiece-and-earphone. A cumbersome sort of contrivance.

Wearily, Mason pushed himself up from the console. He trudged back to the phone.

He took down the hand unit. He set up the cable room's combination. Krumbein answered.

"I want to send a cable," Mason said. "Four cables."

"We're over the hump?" Krumbein asked hopefully.

"The first hump," Mason qualified. He looked back over his shoulder at the red spot on the screen.

"We're ready to record," Krumbein said. "Does this go on the company bill?"

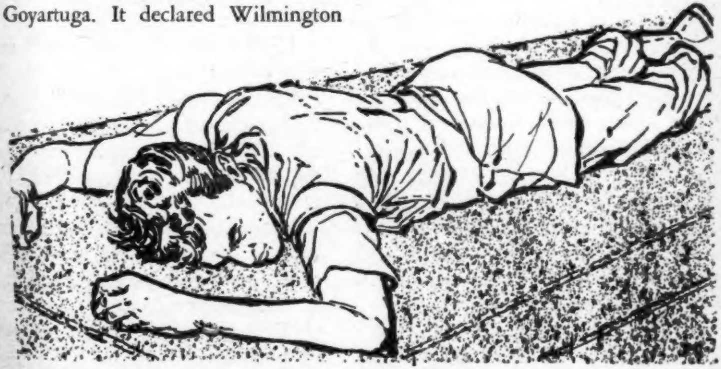
The question brought a chuckle from Mason. "No," he said. "Close out the company account. Put these on a new one—call it 'State Business.' We've got to do this right."

The first cable was to President Goyartuga. It declared Wilmington Dome's independence from the United Americas.

The second cable was addressed to all American domes. Mason pointed out that the only way they could hope to survive the war was to stay out of it—and to do this they had to separate themselves from the United Americas. He urged them to do so. (The dome managers had already agreed to do it—back when the McKinley trouble first began.)

The third cable was to Morley Rushton, Chairman of the World Council, announcing Wilmington Dome's independence, requesting the World Council's recognition, and asking that all governments be notified. (The Council would get a lot of cables like that one and, hoping it would stop the war and hoping to restore its tattered prestige, the Council would do as he asked.)

The fourth cable was to Amory Komroff, president of South Atlantic Mining, Inc. Mason explained what



he had done and why he had done it. As Acting President of the free republic of Wilmington Dome, he offered to buy the dome from the corporation with bonds of indebtedness—the value of the bonds to be set according to the dome's contribution to the corporation's total income, with the market value of the corporation's common stock as a base.

"We can't be an independent nation and still be owned by a private corporation in another country," Mason pointed out. "If any of the stockholders squawk, just remind them a South African bomb would have left them a lot less of their investment."

The red spot on the screen had come perceptibly nearer. When it first appeared, it had been just inside the outermost of the concentric circles. Now it was more nearly halfway between the outermost and the next one in toward the center.

Mason glanced toward the center of the screen. The blue lights spread in a rough arc faced toward the red spot. The activated defense units had the interloper adequately covered.

He turned back to the phone and set up another combination. "Port Traffic Control," a man responded.

"This is Mason," Mason said. "There's a ship"—he glanced back at the screen—"north-northwest of us, about sixty-eight miles out. It doesn't respond to IFF signals. Do you think you can contact it?"

"We can try," the man in Traffic Control said. "We've been watching it up here, but we had orders from Commander Powell to leave hands off. If you want us to, we'll try to speak to them. Commander Powell won't object, will he?"

"No," Mason said. "He won't object."

"It's kind of far," the man hesitated.

"Try," Mason urged.

"What sort of message should I send?"

"First of all, I want to know who they are," Mason said. "They're probably African, but that's the first thing to ask. If they are, tell them we've declared our independence from the United Americas, and we expect to take no part in the war. That includes not shipping any steel or anything else to the mainland. If they like, we'll open our port to them and they can leave an embassy here to see that we do just that."

"Mr. Mason," the Traffic Control man protested. "You're joking."

"I mean it," Mason said. "Start sending and don't stop till you get an answer."

He left the Traffic Control man with a dead phone.

Kramer returned.

"They're all put away," he reported. "And in case you're interested, the old buzzard hasn't anything but a sore belly."

Mason listened. Then, without answering, he set up the combination of his own office on the phone.

Jenny answered.

"Boss—what happened?" she asked breathlessly.

"We sank the Navy," Mason said. "Plug me into the PA, will you?"

"Is it the big show?"

"Yes. Maybe you'd better announce me."

She didn't answer. Her voice came instead through the PA system| "Special announcement," her fresh, youthful voice announced. "Dan Mason has something to say to you. Mr. Mason—"

Mason let a brief pause pass. He had thought a lot about how he would make the announcement, but now that the moment had come, the words came differently than any way he had planned.

The hand unit was an awkward thing to hold on to while he spoke. It broke up his usual thinking.

"My people," he said. He hadn't meant to say that, but those were the words that came and somehow they were very right.

"My people," he said gravely. "The government of the United Americas has deserted us. They have allowed a war to start—exactly how doesn't matter; they could have prevented it—a war which we cannot hope to survive. Already, McKinley Dome has been destroyed, and a ship of unknown origin is approaching our own dome.

"The Panama government's interest is to let the war continue. Our one hope of survival is to stay out of it. This we cannot do so long as we remain a part of the United Americas.

"I have therefore sent cables to President Goyartuga and to the World Council, declaring our independence from the United Americas and our assumption of the privileges and rights of a sovereign nation."

Joe Kramer nudged Mason, made a sign, and went out. A riot might develop after this announcement, and it would be Kramer's job to quell it.

"We can only pray and hope the South Africans will respect our independence and not include us in the war," Mason continued without pause. "I think they will do this, because I credit them with intelligence, and because we—by declaring our independence—have accomplished for them the same objective as they would have achieved by bombing us; for I have announced as our policy that we will make no exports to a nation at war, or have any business with them."

He wondered if he should stop there—if he had said enough. But there was one more thing that had to be said.

"There will be no turning back," he said. "We cannot, with honor, return to the United Americas at some future time. For better or for worse, we are an independent nation and we will remain an independent nation.

"We will hold free elections as soon as possible. Until then, I shall maintain my office. I hope you will abide by my actions. I could see no other way to save us. My people—I thank you."

The last words echoed in the corridor outside. It was all immutable and very final.

"That was great, boss," Jenny said. "You've got 'em in the palm of your hand."

Mason nodded numbly. His shoulders felt heavy. He turned to look at the red spot on the screen. It was still creeping in toward the center. It was now almost to the second circle from the edge.

"I've done all I can," he said. "If we could only tell what they'll do—"

"They?" Jenny asked.

"The Africans," he said.

Hours later, Commander Powell was escorted into Mason's office by two of Kramer's men. Mason dismissed the men with a nod. They withdrew.

"Sit down, commander," Mason invited.

The commander looked haggard, and he was bent over a little. He probably still hurt where Kramer hit him. He let himself down on a chair as if he were fragile.

"What do you want?" he demanded coldly. He had been humiliated, and the rage gleamed coldly in his eyes and creased the corners of his mouth.

Mason leaned his weight against the desk. The desk-edge pressed hard at his side. He was terribly weary; he had not yet had a chance to rest. The sight of the couch against the wall was an awful temptation.

"I want you to understand your situation here," Mason explained. "You belong to the armed forces of a nation at war, and we are a neutral country. We'll have to keep you in custody. Your men, too. I'll try to make your internment as comfortable as possible."

Powell glowered.

"It probably won't be for long," Mason added quickly. "Things should clear up in a week or two, and you'll be returned to the mainland. And I want to apologize for the way one of my men treated you: there was no excuse for it."

"You won't get away with this," Powell swore viciously. "We'll invade you. We'll have you back inside of a week. I'll see you hang!"

He was thinking with his hate, and he was wrong.

Mason shook his head. "I don't think so, commander," he said. "For one thing, we'll be very difficult to invade. We'll close the port's entranceways and sit here laughing at them. They can't get in unless we let them."

"They'll bomb you to hell!"

He spoke it like a white-haired prophet from the Bible, but the promise was hollow.

"They may threaten us," Mason admitted unworriedly. "But it would not gain them much if we called the bluff. Panama will probably decide it's cheaper all around to establish trade relations with us, and let us have our independence."

"There's such a thing as national honor," Powell glowered. "Panama *can't* let you get away with this."

"There's something maybe you don't know, commander," Mason said, unruffled. "Every other American dome has done the same thing we did. So have all the African domes. And the situation's such that neither side can let the other get its domes back. It would mean the war breaking out all over again, because it would revive the dispute over the McKinley manganese deposit. As things stand now, neither side has it, and while they'd each like to have it themselves, they're glad the other doesn't have it and they'll both work to keep it that way. So you see, commander, we may be in a delicate position, but luckily—as it happens—we control the balance of power."

He could see the commander had stopped listening a long time ago. He was like a pond frozen over.

Mason touched a stud on his desk. Powell's escort returned.

"I'm sorry to be so abrupt," Mason said. "But I'm very tired."

Powell cursed him.

Mason watched them go. He felt sorry for Powell.

But even Powell's bitter mouthings couldn't depress him.

He was terribly weary, but the way to the future was clear. The people of Wilmington Dome had accepted their new independence with the thankful docility of men snatched back from the brink of death. Their only feeling was profound relief.

The World Council had acted quickly to confirm the independence of the sea domes. In a day or two, the confederation movement could be started. Releasing the news of McKinley's evacuation — and Jan Christian Smuts Dome's part in it—would help that along.

Johannesburg and Panama had been silent, but nothing could be expected from them now except bluster. The war was—for all practical purposes—over. The African ship had come in and left an embassy and gone again. Reports from other domes—American and African alike—told of similar arrangements.

Everything was happening the way he had hoped and planned and gambled. He felt the weary satisfaction of a job done well.

He got up from his desk. He crossed the room.

"Jenny," he said. "Unless something very important comes in, don't bother me. I'm going to get some sleep."

He lay down on the couch, and slept.

*LEAGUE OF THE DEEP: A "strong mayor" confederation of undersea domes formed immediately after the War of the Deeps by the rebellious South African and American domes, the later joined by domes seceding from Portugal, Spain, Russia, Germany, and other nations.*

*A first rank power since 2073, when . . .*

*Quincy B. Whitfield,*
"Outline of International Affairs,
Cram-Course Outline Series,
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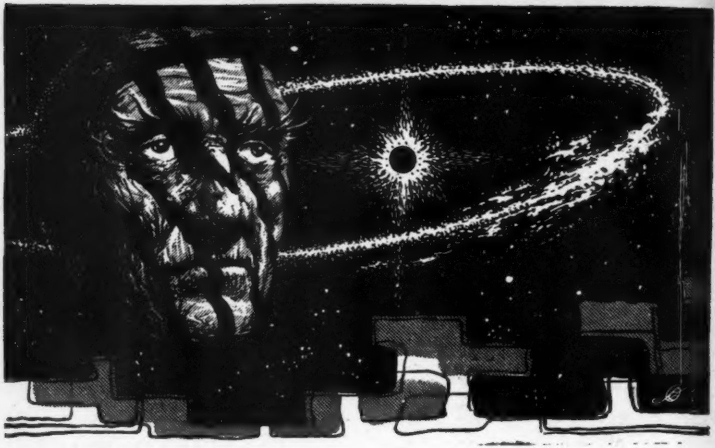
THE END



# PENAL SERVITUDE

## BY RANDALL GARRETT

Illustrated by Freas

***There is, of course, one kind of prison that a man can not escape—and will seek to prevent others from taking him out of . . .***

*"Why this spade? this place?*
*This slavelike habit? and these looks of care?*
*Thy flatterers yet wear silk, drink wine, lie soft,*
*Hug their diseased perfumes, and have forgot*
*That ever Timon was."*
William Shakespeare
*"Timon of Athens,"* Act IV, Scene iii

FELLISTER DEK ROMIN watched the crowd of tiny images in the tri-di tank. His face was impassive, but his right hand kept making small, convulsive, pinching gestures.

Fellister dek Romin watched the crowd of tiny images in the tri-di tank. His face was impassive, but his right hand kept making small, convulsive, pinching gestures.

I noticed it, and I tried to keep the grin off my face. Fellister dek Romin was trying to resist the irrational impulse to reach into the tri-di tank and pinch off the head of one of the small images. I'll admit that when a man like Fellister sees the image of someone he hates reduced to the size of a mouse, it's hard to resist the temptation to mash it. Once, Fellister actually reached out his hand, idly touching the hard, invisible surface of the tank. At that instant, the scene changed, and the close-up of Prince Adelfi's face made Fellister jerk his fingers away as though they had been burnt.

". . . Although he isn't due to speak for ten minutes yet, the crowd is screaming for him to address them!" said the voice of the hidden announcer. "I've never seen a crowd so excited! From the Grand Square, the huge tri-di image of His Serenity is easily visible, and every time he waves, the people scream even louder!"

The announcer was trying to keep calm, but you could hear the exclamation points in his voice at the end of every sentence.

Fellister dek Romin reached out his right hand again, this time for the cut-off knob. At the last moment, his hand veered aside, and he cut off the sound only, leaving the images moving in silence.

He leaned back in the big, soft chair, picked up his drink, and smiled at me. "We'll listen in when he begins his speech, eh? Might as well give Prince Adelfi a chance to enjoy his tenth anniversary as Prince of Suadin—it's going to be his last . . ."

I looked again at the silent image of the prince and the soundlessly cheering mob. "Are you sure, Fell?" I asked, trying to put my best note of anxiety in my voice.

Again, his easy smile. "Did you ever hear of a man named Napolon?"

I shook my head. "No," I said. "Who is Napolon?"

"Not *is*," he corrected condescendingly, "*Was*. He lived, centuries ago, on a planet named Frants, a part of the Yerrip Cluster. He conquered Frants first, and then all of Yerrip, except for the Inglond System. Then he . . ."

I didn't hear what he said then. I suddenly recognized who he was talking about, and almost choked on my drink. I fought to suppress an absolute fit of the galloping giggles which threatened to strangle me.

I finally decided choking was easier, so I conveniently swallowed a piece of ice and had a fine time gagging.

"What's the matter, Bran? Drink too strong for you?" Fell asked.

I coughed again. "No . . . no . . . little of it went down my windpipe, I guess. You were saying?"

"I was saying," Fellister said coldly, "that the same thing applies to Gianovin t'Lhast. Don't forget, his memory still remains in the hearts of the people of Suadin, even after ten years. Once we free him, Gianovin will lead us again to victory—over Prince Adelfi; over the stupid Galactic Union; over Earth, even; and perhaps the entire galaxy, in the end."

I nodded and kept my mouth shut. The one place where my judgment is sometimes faulty is in assuming too much from a single bit of data. Just because Fellister dek Romin was so ludicrously weak on galactic history was no reason to feel that he was stupid. He wasn't, not by a long shot, and I had to remind myself of it and force myself to *keep* it in mind.

"You look astonished, Bran," he said. "Does the mention of Earth shock you?"

I shrugged. "I'm not a policy-maker, Fell; I'm just a small cog in a big machine. I do my job; I'm loyal. I ask nothing more than that I be allowed to serve. I'm no wild-eyed fanatic."

That softened him. He was a handsome man, Fellister—tall, broad-shouldered, blond of hair, and blue of eye. He was also highly susceptible to skillful flattery.

He leaned forward, and the flickering light from the images in the tri-di danced weirdly across his face. "I know you're not a fanatic, Bran. You're not the type. But we don't want fanatics, really. Actually, you are the type of man we'll need in the long run; the quiet, determined type. The kind of man who isn't bent on making himself widely known, but simply wants to do what has to be done and is absolutely determined to do it. You, my friend, are like the tide compared to the wind-blown wave. Do you follow me?"

In spite of the fancy verbiage, I did follow him. He was no slouch at flattery, himself, and if I had actually been the kind of man that Bran dek Volin was supposed to be, I'd have gone for it hook, line, sinker, and pole.

I looked embarrassed and said: "Thanks, but—"

"*But,* nothing!" said Fellister. His manner became that of the kindly father who is angry with a child because the child has not yet realized his own potentialities. "It is you—and the very few men like you—who will actually profit by the glorious Return of Lord Gianovin to the Throne of Suadin. He knows perfectly well that the wild-eyed fanatics are unstable—they will turn against him if they are disturbed by a cross-wind. He knows that men like yourself are the backbone of any movement."

I nodded silently.

"He knows," Fellister dek Romin

went on, "that a man like yourself —willing to stick to a leader, a cause, a principle, through any kind of popular abuse—a man like yourself is worth a thousand fanatics."

I still didn't say anything; I just looked respectful. It would have been out of character for Bran dek Volin to ask how Fellister knew what Gianovin t'Lhast was thinking, since the ex-tyrant hadn't been heard from in ten years. Bran dek Volin wouldn't think of anything like that, and Fellister knew it.

He reached over to the tri-di, eased up the volume just enough to hear the announcer say: ". . . Parading by below the . . ."

Then he turned it down again and looked back at me. "We know where he is, Bran," he said. "After ten years, we've located him. When he is again President, Suadin will be free."

"What about General Thorgan?" I asked innocently. "Have you found *him* yet?"

Fellister gave me a fast, troubled glance out of the corner of his eye. I went on looking innocent.

"Lord Gianovin will know where the general is, Bran," he said. "You may be sure of that."

"Yes," I said, "I'm sure he will." I tried to look very agreeable.

Fellister finished his drink and mixed himself another, all the time keeping one eye on the tri-di. I had only half finished mine, so he didn't bother to fix another for me.

Fellister dek Romin had a nice, quiet little apartment in a middle-class neighborhood near the lake, on the west side of Nooshik City, the capital of Suadin. It was a much better place than the one in which he'd lived ten years before, but things like that don't count with a man like dek Romin. He'd been on his way up in the government of Lord Gianovin t'Lhast, and it was his idea that if Gianovin had stayed in power, he, Fellister dek Romin, would now be one of the top men in the government.

Maybe he would have been, I don't know. He certainly had the drive to get somewhere in that sort of setup.

Fellister tinkled ice into his glass, stirred it well, and sat down again. "You do have your duty to perform, Bran dek Volin," he said softly. His eyes were on the tri-di, not on my face.

"Whatever the Group asks," I said, in my most dedicated manner.

"It will take nearly a million in cash to get to our beloved Lord Gianovin," he said, still without looking at me. "We must all give according to our ability."

"How much?" I asked. Not even Bran dek Volin would misunderstand a statement like that.

"The Group have decided to assess you fifty thousand," he said. "Only fifty thousand." He rolled the words around, moving his mouth as though he were tasting molasses.

I grabbed my glass and took a deep drink. "That . . . that's quite a bit," I said.

Then he turned those blue eyes on me.

"I think the Group had dealt with you very liberally, Bran, considering the position you—" He sort of trailed off.

"Oh, yes," I said hastily, "yes, I know. If the Group needs it, of course I'll be glad to give it." I swallowed and looked nervous. "When do you want it, Fell?"

He gestured in an offhand manner, and his fatherly pose came back. "Tomorrow, if possible. If not, then the next day. We have time, and there is no need to strain your resources."

I stood up. "I'll get it for you by tomorrow, Fell. It . . . it's no trouble, really."

He looked up at me, looking concerned and *very* fatherly.

"Well, now, Bran, there's no great hurry. You're not leaving?"

"I'll have to," I said. "Got to get to the bank—get things rolling, you know." False heartiness, larded on a little.

He nodded ."Certainly—I understand. But"—he waved at the tri-di—"you don't want to miss Prince Adelfi's speech."

"I'll read it later," I said. "He won't say anything important."

"Likely not. Well . . . I'll see you tomorrow, then?"

"Certainly, Fell. Tomorrow. I'll give you a call."

"Very well. Tomorrow, then."

He sat there, looking at the tri-di, while I made my way out of his apartment and onto the street.

People who live in more—well, *civilized* is as good a word as any—civilized parts of the galaxy, where the matter of government is taken for granted as the functional, operating force that it is, can't really be expected to understand what was going on in the Delf Cluster, and on the planet Suadin.

If you want the whole story, you can look it up in Lamont d'Argent's "History of the Delfian Insurrection," but I'll give it to you fast so that you can get the picture.

Gianovin t'Lhast was born on Suadin in 1099.

1129—Gianovin became Head of the Suadin Police.

1140—Gianovin became elective President of the Suadin System.

1166—Gianovin t'Lhast was defeated at the Battle of the Giant Rift, by the Grand Fleet of Theredin IV. He was tried by the Government of Earth, and sentenced to penal servitude for life. You see, most people in the galaxy don't realize who runs the galaxy; Earth likes to keep its mouth shut.

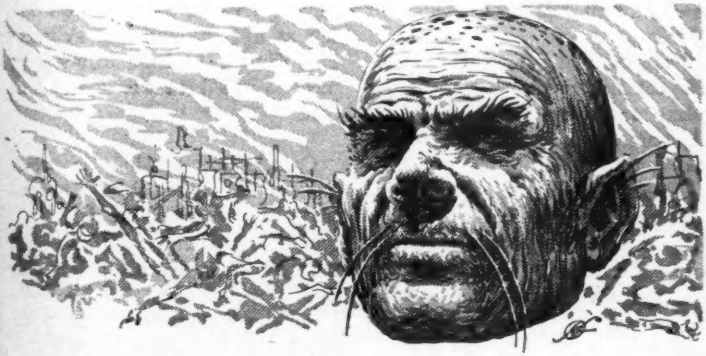
Who was Gianovin? Well, it depends on your viewpoint. If you were a member of the Suadin Alliance, you thought of him as Lord Gianovin t'Lhast—Savior of Suadin, Conqueror of Delf, Ruler of the Cluster, and all sorts of noble titles.

If, on the other hand, you were a citizen of one of the neighboring Systems, the names were likely to be less flattering.

Gianovin t'Lhast—butcher, murderer, killer . . .

You name it, he had it.

Gianovin t'Lhast was remembered as the man who won the Battle of Callaghan's Cluster by using sheer brainpower against physical odds of three-to-one; the equally undisputable fact, that he needlessly butchered three billion innocent noncombatant human and humanoid beings in the process, is forgotten.



Gianovin thought nothing of using a planet-wrecker; that was old-hat to him. Gianovin felt that if a planet didn't feel like giving in to his rule, they should serve as an example.

Earth records show that four planets—totaling nine billion human beings—died as examples. That doesn't count those who died during small bombings and during the epidemics that Gianovin caused.

Gianovin t'Lhast, in other words, was one of the nastiest, dirtiest, most devil-inspired, infamous, murderous, no-good military geniuses that the galaxy has ever spawned. If you have any more adjectives you'd like to stick into that last sentence, do so. As long as they are opprobrious, they'll fit.

And Fellister dek Romin and his Group wanted to restore t'Lhast to power. It wouldn't really have taken much effort; ten years is not long enough to change the total basic pattern of a culture. Especially a culture as widespread as that of Suadin.

Granted, with modern techniques, it is possible to change the social and moral outlook of an individual within a very short time—provided that he has the basic moral concepts to begin with. But changing the moral outlook of a whole culture is a difficult and time-consuming job, even for the best of psychotechnic engineers.

I remember the example they gave us in school. Take a look at it; maybe you'll learn something.

"A single burning tree can be extinguished easily by one man; two trees can be extinguished by two men. But a closely compacted forest of five thousand trees, if they are in close physical relationship to each other and each of them is ablaze, cannot be extinguished by five thousand men."

Like every other example, it shows the operation of the Modified Square-Cube Law in human culture.

So even the brilliantly benevolent rule of Prince Adelfi couldn't completely wipe out twenty-six years of rule by the madman-genius, Gionavin t'Lhast.

I suppose that the second most intelligent man in that section of the galaxy was Space General Thugagar Thorgan, the man who was second-in-command to Gianovin.

General Thorgan had, if anything, been credited with being a worse butcher than Gianovin had ever been. The president had, since the war, been presented, by his supporters, as a kindly man who had only wanted to do his best for Suadin. The real villain, it was pointed out, was General Thugagar Thorgan.

A lot of people fell for it, especially the Suadinese. They hated to think of their beloved Gianovin as the louse he was, so they were perfectly willing to put all the blame on his lieutenant, Thorgan.

And there was reason for that, too. Gianovin had been captured after the war, and he'd been tried by the Earth Tribunal. The sentence was penal servitude for life.

But Thorgan had gotten away clean.

Since the war, no one had seen him.

Since the war, he remained the most potentially dangerous man in the galaxy.

It had been my job to find him.

Therefore, it gave me a great deal of pleasure, as I walked down the streets of Nooshik City to realize that I had at last uncovered the hiding place of General Thugagar Thorgan. Because, in order to get Gianovin t'Lhast out of wherever he was, Thugagar would have to reveal himself as the real leader of Fellister's little Group. At least, that was my theory, and I'd stuck to it for a long time.

Outside the building in which Fellister dek Romin lived, I stopped and looked furtively around.

It was perfectly within character. Bran dek Volin was the kind of man who would *always* look furtively around, as though he expected to be watched by the police at every moment. Of course, unless there were someone about wearing a black uniform or a long cape and a mirro-mask, Bran was always quite sure that there was no one around. A man would have to be pretty obvious to arouse Bran's suspicions, because that's the type of bloke Bran dek Volin was.

So I pretended not to notice the plant down the street. He was the same thin, ordinary-looking geek who had been following me for the past week. Before that, it had been a fatter man, and before that—

Well, my record with the Group had stayed good for a long time because I scrupulously kept my nose clean and didn't try to dodge my tails. This time, the geek was in for a surprise.

I turned up the street and headed toward my bank. It was a perfectly natural thing to do; where else do you go to get money?

The thing was that I had palmed myself off to Fell and his Group as a man with plenty of jack to throw around. That was the only way I could get in; they needed money, and lots of it.

I'd succeeded so far in carrying the bluff through, but now my hand had been called. Where was I going to get any fantastic sum like fifty thousand?

The answer was: I wasn't.

It was time to call in the reserves.

They might be a little surprised to see me after all these years, but it had to be done. If Bran dek Volin didn't show up with that loot tomorrow, he was very likely to find himself lost, as the saying goes, half a parsec from nowhere without a spacesuit. And, when it came to the Group, there might be reason to take that old saying literally.

So, in spite of how surprised the reserves might be, I was going to remind them that I still existed.

I stepped onto an eastbound slidewalk and stood there, looking just a trifle worried while it carried me along. I knew that the thin fellow wasn't far behind, but I didn't look around to check. Bran dek Volin was supposed to be a basically respectable guy who only worried about being watched when in the immediate vicinity of conspirators.

That was the reason the Group had me followed. They didn't think I was up to any treachery, but they didn't think I was a very strong character, either.

I guess I didn't have the proper cutthroat attitude.

Fifteen minutes later, I walked into the Surety Deposit Bank.

Here, I assumed a more lordly air. No sniveling here for Bran dek Volin; here, Bran dek Volin was a man of some importance. The guards and clerks all knew me and all smiled and nodded in a business-friendly fashion. Getting a reputation at a bank takes only a modicum of ready cash and an iron-hard resistance to temptation. You go in, make a small loan on small securities, and pay it back exactly on time. That isn't hard to do if you don't ever spend the money. Borrow a hundred, stash it away, and pay it back that's all. All it costs you is a little interest. Then, a month or so later, you borrow a little more and do the same thing. Nothing to it.

Inside of a few years, you're borrowing sizable amounts on your reputation only. I suppose it might be possible to make an illegal bit by absconding with the borrowed money, but it isn't worth it in terms of the time spent making the reputation. Believe me, the man with larceny in his soul usually doesn't have what it takes to leave a thousand or so in cash hidden in his apartment and do nothing with it but pay it back to the bank; usually, temptation overcomes him, he spends some of it, and he finds himself in the hole eventually.

I don't mean to say that I have the will power of a saint, but I did have a greater goal in mind than gypping the bank out of a little money.

In addition, I suppose I did have some spare scruples lying around somewhere; I could have borrowed the fifty thousand I needed from Surety Deposit, but I'd never have been able to pay it back if I gave it to the Group.

The guard on duty in the safety deposit vault knew me and gave me a smile, and a hello. But he still shoved out the plate for my thumbprint. I rolled my thumb across it; the robot comparitor took a look at it and said that I was, indeed, Bran dek Volin, who had a box within the vault. I went on in.

Forty-five seconds later, I was inside one of the private booths where depositors are allowed to add to or subtract from the secret contents of their boxes or simply gloat over their hidden treasures.

Me, I had a few things to add and a few to subtract.

The thin man who had been following me didn't come into the big vault, nor did anyone else come in before I got into the booth. If anyone from the Group came in after that, they couldn't know where I was because the booths are opaque from the outside. If you're inside one, you can see out, but those outside can't see in.

I watched for a couple of minutes, but none of those who came in seemed interested in looking for me. The only chance I had of being caught was the chance that the Group had someone already in the vault, hiding in one of the booths. That was so farfetched that I'd be pretty safe in chancing it.

I'm prematurely bald, but I'm not nearly as fat as I appeared to be to Fellister and the Group. I deflated the underpadding that gave me the extra plumpness, and put the shrunken remains into the safety deposit box. Then I took out a bottle of special solvent and wiped away the silver-gray from the fringe around my shiny pate. A dark brown toupee covered the bald spot nicely, held down firmly by special stickum. It took ten or fifteen years off my apparent age.

The face was a little more difficult. The protienoid plastic of pseudoflesh tends to adhere to the skin pretty tightly; you can leave a man raw and bleeding by ripping it off. It took me a minute or two to get the fine lubricant worked underneath the stuff and peel it off.

I looked at myself in the mirror I had put in the box. Too pale. The natives of Suadin come from somewhat darker stock than I do. I worked in some dye until my skin was the proper brown.

Bran dek Volin was a short, chubby, middle-aged man who was somewhat conservative in his dress. The small package of clothing in the safety deposit box was a great deal more flamboyant than anything Bran would wear.

A few minor adjustments to my shoes added an inch and a half to my height.

I looked myself over. O.K.? O.K.

I looked at my wrist watch. I'd timed it almost perfectly. The guard at the entrance to the vault would be changing in about a minute. I waited three to make sure.

Then I simply left the booth, after returning the safety deposit box to its sealed resting place. The guard didn't pay any attention as I left. Why should he? He had to be careful who he let in, but there was no necessity to check everyone who came out. He gave me a glance, made a mark on his tally, and ignored me.

The thin geek who had been following me was standing over by one of the information booths pretending to look something up. He, too, gave me a glance and then ignored me. He was still standing there as I walked out of the bank. He'd wait a long time before he saw Bran dek Volin come out of the safety deposit vault.

I took a slidewalk north and added to my velocity by strolling along it, something Bran dek Volin would never do. There weren't very many people on the walk. Most of them were in bars or restaurants, watching Prince Adelfi on the tri-di. It had only been half an hour since I had left Fellister's place, and the prince was still speaking. Several times, I got glimpses of his sad-smiling, careworn face as I passed by public tri-di tanks. Ten years of making Suadin into a properly-run planet had taken a lot out of the man.

Once in a while, there were cheers as he said something particularly warming. Most of the people of Suadin loved him after two decades under Gianovin t'Lhast's sadistic tyranny, any sensible culture would have welcomed Prince Adelfi.

But there were still fatheads who let words get in their way. A president, elected by the people, runs a democracy; a prince is an absolute ruler, and therefore a despot. It doesn't matter to a fathead that the "president" may get himself elected by shooting anyone who might vote against him; or that a true aristocrat is a prince because he is dedicated to his people and more capable than anyone else. Oh, no; it's the "principle of the thing." And the principle is this: A fathead is a dangerous man.

Centuries ago, someone said: "God must have loved the Common Man because He made so many of them." Fatheads have been doing fatheaded things in the name of the Common Man ever since.

But true saints are far from being plentiful, and I have a firm belief that He loves them a great deal more than He loves the Common Man.

I spent the next forty-five minutes dodging around the city before I ended up in the big, imposing Earth Consulate Building on 637th Street.

The trim-looking Earthgirl with the coffee-colored skin and the startling green eyes smiled up at me from behind the appointment desk in the main lobby.

"Whom did you wish to see, sir?"

"Henry Bergaust," I told her. "Tell him that John Poulter is calling." It was a good Terran name, unfortunately not my own. I knew Bergaust would recognize it.

"Is he expecting you, sir?" the girl asked.

I couldn't help grinning. "I doubt it. But I think he'll see me."

She spoke into the communicator. I couldn't hear the other end of the conversation, but after a few words, the girl smiled and slid a pink ticket into a machine in front of her. She poked at a few keys, pulled out the pink ticket, and handed it to me.

"Take Number Twelve Lift Chute," she said, "and go to the Eightieth Level. The guard there will tell you where to go from there. Mr. Bergaust is expecting you."

As I took the pink ticket, she said: "Keep that ticket in your hand, visible at all times. Don't try to go anywhere except where the instructions tell you."

I nodded and looked at the card. *Lift Chute 12. Level 80. Office 8076.* I knew that if I tried to go anywhere except to the destination assigned, I'd be picked up fast. The molecules of the little plastic ticket had been imprinted with certain information; as long as I carried it, I could be detected anywhere in the building. If I *didn't* carry it—if I destroyed it or threw it away—I'd be tossed out of the Earth Consulate Building within five seconds.

I headed for Lift 12. The Earthman standing guard at the bank of chute entrances glanced at my card, glanced at a hidden meter on the desk in front of him, and said: "Lift 12 is directly to your left. Step in when the light is blue."

I went to the black opening of Lift 12 and waited for the light to turn blue. When it did, I stepped in—fast. It took twenty seconds for the field in the lift chute to whisk me to the eightieth floor.

There was another guard there, waiting for me as I stepped out of the tube. He went through the same glancing business as the other guard and, and then said: "Mr. Bergaust is in Office 8076. Go down the corridor"—he pointed.—"past the first two side corridors, to the third side corridor. Turn to your left and keep going until you come to 8076." Again, the characteristic pause before the warning. "Don't forget—the *third* corridor."

I knew that if I tried disobeying I'd be out on my ear—or worse. Earthmen are just as polite as they can be, but they're tougher than stellite chains.

I headed down the corridor.

*8076*

I looked at the number on the door for a second.

Well—what the hell. That's what I'd come here for.

I pushed at the announcer plate, and the door slid open.

I stepped in.

The guy sitting behind the desk was a smallish looking man—dark, very curly hair, and brown eyes. He looked as though he'd been working for twenty-four hours a day all his life.

"Henry Bergaust?" I asked, in my best manner.

A grin came across his wide mouth, and he motioned toward a chair. "Sit down, John Poulter. I've been expecting you for years."

I sat down and took a deep breath. "Much as I'd like to," I said, "I don't quite believe that."

"Of course not," said Bergaust. "But you came back, nevertheless."

I felt forced to admit the truth of that statement.

"Posthypnotic suggestion?" I asked.

Bergaust shook his head. "No. It wasn't necessary; we knew what kind of man you were when you came here. We just waited." He punched a few buttons on his desk and looked at a screen which I couldn't see. "Just rechecking our files," he said, without looking up. His smile faded, and the sad look came back. "You were a native of Polska."

I nodded. "*Was* is the right tense. I understand your engineers are decontaminating the planet now."

"They are. But even with modern techniques, Mr. Poulter, it takes time. The planet will eventually be habitable." He looked at me keenly through those brown eyes. "You sound just a little bitter, Mr. Poulter."

"Perhaps," I admitted. "I've always felt that Earth could have stepped in and stopped Gianovin t'Lhast before Polska was dusted."

He shook his head slowly. "No. For two reasons. In the first place, we can *not* make it our business to stop every little war in the galaxy; the galaxy is much too big for that. Not even Earth could handle the job. But the use of either annhilation bombs or radiodust constitutes the crime of attempted genocide. And then we must step in."

"And the second reason?"

He spread his hands. "The second reason is a very practical psychological one. As long as Lord Gianovin was leading his people on a 'noble crusade,' they were perfectly content to allow him to remain Lord President of Suadin. But when we showed those tapes of the dusting of Polska, it turned the stomachs of the Suadinese. And it also turned their hearts against Gianovin t'Lhast. Only then was our already accomplished arrest of the Lord President accepted by Suadin."

"I'll accept that," I said. "It's coldblooded, and I don't like it, but I have to admit to a certain amount of coldbloodedness myself."

"Any man who knows and uses his own limits and those of the Universe must occasionally be . . .

ah . . . a little bloodthirsty, though it may arouse antipathy and even hatred in those who stupidly refuse to think through a problem."

I grinned. " 'Hate you?' " I quoted. " 'Oh, Katisha! Is there not beauty even in bloodthirstiness?' "

Bergaust smiled and looked again at the hidden screen. "You know Earth's ancient literature, I see. When you came to us ten years ago, demanding that we execute Gianovin t'Lhast, you were a little bit bloodthirsty yourself." He punched another button. "You represented yourself as the sole remaining member of the legal government of Polska." He smiled up at me. "I make no judgments, of course."

"It wasn't completely true," I admitted. "I think I've matured a little in ten years."

"Hm-m-m." He glanced at the screen again and pressed another button. "At that time, our psychologists predicted that you would spend the rest of your life hunting Gianovin, but that eventually you would return to us for help. That's why you were told to come to any Earth Consulate and ask for Henry Bergaust."

I nodded. I'd known, of course, that "Bergaust" was nothing more than a code name, just as "Poulter" was. It didn't matter; names don't mean anything, anyway.

"There's just one error your psychologists made in their prediction," I told him. "I've quit hunting for Gianovin for years now. Knowing Earth as I do, I'm quite convinced that he's suffering more at your mercy than he ever would have at mine."

Bergaust's face registered mild surprise. "You're quite right," he said. "I can assure you that Gianovin t'Lhast is at this moment suffering the tortures of the damned—in a quite literal, theological sense. But" —again that glance at the screen— "if you're not looking for him, why have you come to us?"

"First, let me ask you one question," I said. "Have you ever captured General Thugagar Thorgan?"

His eyes lit up, and he punched savagely at the buttons under his screen. Then he stared at it for nearly a minute.

"I am permitted to tell you," he said at last, "that we have been able to find no trace of Thorgan. There is a probability of .37 that he is dead, and a probability of .39 that he is living quietly, incognito, on some distant planet."

"That leaves a .24 probability of his being elsewhere," I pointed out.

Bergaust smiled. "You've found him?"

"I think so." And I went into a full explanation of what I had been doing for the past few years.

When I was through talking, Bergaust, who had interrupted with questions only a few times, leaned back in his chair and looked thoughtfully at the ceiling. "You think, then, that Thugagar Thorgan is the man actually behind this. Why?"

"Answer me another question, first," I said. "Is it actually possible that the Group has uncovered Gianovin's whereabouts? Is it possible that they actually could rescue him?"

He thought that over for a minute before he answered. "I can say this," he began carefully, "if they know where he is, then they also know that it is flatly impossible for them to rescue him, and they know that he could never make a comeback as Lord President of Suadin."

"That's why I think Thorgan is behind the Group," I said.

Bergaust looked slightly baffled. "I'm afraid I don't quite follow your reasoning."

"I know Earth," I said. "I've studied her. I know that Earth is the real ruler of the galaxy, whether anyone wants to admit it or not. In technology, in individual and mass psychology, and in every other field, Earth is and always has been tops. I simply didn't think it was possible for the Group to take Gianovin away from Earth—unless you wanted them to have him. It would be like a baby trying to take candy from an adult."

"You flatter us—but not much," said Bergaust, showing hard, white teeth. "Go on with your reasoning."

"General Thugagar Thorgan is a brilliant man," I said. "Second only to Gianovin himself. He knows he couldn't rescue Gianovin, and he doesn't want to. If he did, then he, General Thorgan, would again be the second-in-command, and he doesn't want that; he wants to be the boss."

Bergaust nodded. "It fits. Go on."

"We also have the fact that my friend Fellister dek Romin undoubtedly thinks that Gianovin t'Lhast is going to be rescued. Somebody bigger, stronger, and tougher-minded than he is must have convinced him that it was possible to rescue the ex-President. Who would that be but Thugagar Thorgan?

"According to my figuring, Thorgan intends to pull off a phony rescue. He's spent the last ten years digging up a substitute for Gianovin—a double. Not physically, of course; a little surgery could make a perfect double, provided the bone-structure was similar. But what Thorgan would need would be someone who could be molded psychologically to act and think like Gianovin—except that he would be under Thorgan's control.

"From a few things that Fellister has let slip, I'm sure that he knows where Thorgan is. That means that Thorgan is in charge of the operation of the Group."

Bergaust had listened to my long speech quietly. Now he said: "It sounds probable to me. Let me run it through our computers, though; they can correlate it with all the other factors." He started punching more buttons.

I knew he'd been recording our conversation. Now the information was being coded and chewed over by a computer somewhere.

He smiled at something that had come on the screen. "Our intelligence system isn't perfect, I see. We have quite a file on Bran dek Volin, but it wasn't known that you were he.

I think that one bit of information may change a lot of our figuring."

Then, after a few more minutes: "I was right. There is now a .84 probability that your analysis of the situation is correct." There was an anticipatory gleam in his eyes, and an undercurrent of excitement in his voice. "Thorgan is more dangerous than we thought. It's probable that he intends to keep himself hidden—as Thorgan.

"There has been increased propaganda, of late, that Thorgan, not Gianovin, was responsible for the Polska massacre. It's been spread around that Thorgan did it against Gianovin's orders. That's not true, of course, but it would give the new phony Gianovin a scapegoat, which would enable him to resume leadership of Suadin with the peoples' consent. Thorgan has probably already had himself physically altered."

"That means that Fellister dek Romin's usefulness will be over as soon as Thugagar Thorgan's coup is complete," I said.

"Obviously. And they know we couldn't legally interfere." His smile took on a colder quality. "It looks as though we'll have to interfere illegally. You'll get your fifty thousand, John Poulter."

"I figured I would," I said.

"Bran," said Fellister dek Romin sharply, "you're being ridiculous. I hesitate to call your actions treasonous, but they border on it."

"I don't see what's treasonous about it," I said defensively. "I'm just tired of being in the dark all the time. I want to be sure my money's going to be used properly, that's all."

Fellister paced up and down his apartment. I could almost hear him thinking that it was unreasonable for Bran dek Volin to be so stubborn, when he had always been so pliable before.

Still, it was perfectly in character. Money was one thing that Bran dek Volin would be very stubborn about, especially when he'd had a full day to think about it. Fifty thousand was a good hunk of cash.

"But you are supposed to be directly responsible to me," he said. "I can *not* take you to the Group Leader."

"And I'm not going to lay out fifty thousand in cash unless I see some chance of its being put to good use," I said reasonably. "If you can show me that there's a good chance of our rescuing the Lord President, I'll give twice that much—gladly. But I want to talk to someone higher in the Group."

The argument had been going in circles for more than an hour. I insisted that I see the Group Leader before I gave any money, and Fellister was equally insistent that I give him the money and forget about seeing the Group Leader. We were getting nowhere fast.

I saw that I'd have to add a little more fuel to the fire.

"Look," I said, "why don't you call the Group Leader and ask *him* what he thinks. I believe he'll understand my viewpoint; he must be a reasonable man."

It took another ten minutes of argument to get Fellister to do anything as simple as that. The man was actually afraid to overstep his own authority, even to that extent. Finally, however, he saw that if he didn't, he wouldn't get my money, and that would mean he had failed in his duty. Frowning angrily, he went into the big room he used as an office, and slammed the door.

I waited. I waited for an hour and a half.

When he came out again, there was a smile of relief on his face, and his eyes had a definitely sly look in them.

"You say you'd give twice that much, a full hundred thousand, if we could prove conclusively that there is an excellent chance of our rescuing Lord Gianovin?"

"That's right, Fell." I wondered what he was up to now.

He sat down in his chair, and his smile became confidential. He returned to the old paternalistic attitude.

"Bran, the Group Leader feels that you are perfectly justified in your attitude. I feel the same, of course; the only reason I didn't want to call the Leader was that, since he doesn't know you as I do, he might misunderstand your motivations. But he feels that you deserve proof."

"I knew the Group Leader would see it my way," I said pompously. "What are you going to do? When can I see the Group Leader?"

Fell shook his head. "You can't. I'm sorry, but he absolutely forbids it."

I didn't like that. It sounded as though all my argument had gotten me nowhere. I knew I might not like what Fellister had in mind.

"Now, see here," I began, "we agreed—"

"We agreed on nothing!" Fellister snapped. "Except, of course, that you would give a hundred thousand to the Group if we could prove that we have an excellent chance of rescuing Lord Gianovin from his years

of penal servitude. And we can do that."

"And where's your proof?" I asked.

"Do you have the hundred thousand?" countered Fellister.

"With me?" I looked astonished. "Of course not. I have fifty thousand in cash; I spent all day yesterday at the bank liquidating some of my holdings to get that much. I can have the other fifty thousand in two days."

"Let's see the money."

I took out a bearer-check. It was signed "Bran dek Volin" and thumbprinted in the upper left corner. As soon as it was countersigned and counterprinted, it would be as good as cash.

Fellister dek Romin took it and looked at it. "You're very cautious with your money," he said.

"If I wasn't cautious, I wouldn't have it to give you. I'll tell you what I'll do. You give me this proof you're talking about, and I'll countersign that check and get the other fifty thousand within three days."

Fellister took the check with him into his office and stayed a few minutes. When he came out, his smile was back on his face.

"Very well, Bran; the Group Leader says that's perfectly acceptable." He put the check on the tea table, near a stylus. "Would you be happy to know that we have already rescued General Thugagar Thorgan?" he asked softly.

I felt just as surprised as I looked, but not for the same reason. I knew then that Bran dek Volin's death warrant had already been signed—or rather, I would sign it myself when I signed that check. If they were willing to tell me about Thorgan, they were ready to dispense with me.

"You look astonished, Bran," said Fellister. "Didn't you think the Group could accomplish such a thing?"

"I didn't know it had already been done," I said. "But I'd have to speak to the general himself before I could sign that check." I was already in too deep; I might as well go all the way.

"We anticipated that," Fellister said. "We'll have a direct vision hookup ready for you in a very few minutes."

"I want to see him in person," I said firmly.

"Impossible," said Fellister coldly. "The general can't afford to risk capture by Prince Adelfi's police, no matter what the cost. A subwave transmitter is untraceable; he can safely contact you that way. I warn you, Bran dek Volin, you can easily jeopardize your future with the Group if you persist in questioning the judgments of your leaders."

I wasn't worried about that, but I did realize that I'd pushed Fellister and Thorgan as far as they'd go. I'd have to be satisfied with what I had. It meant more delay, and possibly more investment from the Earth Consulate, but I'd done the best I could. I had hoped to force Fellister to take me to Thorgan, alias the Group Leader; I saw now that they wouldn't do that, even for a hundred thousand in cash. My worry from now on would be getting away from Fellister's apartment with a whole hide.

"I understand the Lord General's position," I said nervously. "I guess talking to him on the tri-di will be all right."

Within five minutes, the hookup was made. It wouldn't tell where Thorgan was. It could be halfway around the planet, or even on another planet in the cluster. But it was Thorgan, all right.

He was big, broad-faced, and hard-looking. And there was an almost indefinable look of some queer hunger in his dark eyes.

"Bran dek Volin, eh?" he growled. He was trying to sound pleasant, but he didn't make it. It was easy to see why he'd never make a popular leader, why he needed a figurehead.

"Yes, general; I'm Bran dek Volin." I hesitated. "Congratulations on your rescue, sir. Was . . . was it very bad?"

"It wasn't easy," he growled. "Ten years of back-breaking labor might have killed a man of lesser physical strength than myself." Modesty had never been a point in the general's favor.

"I want to thank you," he went on, "for your generous contribution to the Group. I can't talk to you very long now, but rest assured that you'll be given consideration for a high post in the government when Lord Gianovin is restored to office."

"Thank you, sir. I'll do what I can to deserve the honor."

"I'm sure you will. That's all for now, then." And he cut off.

Well, that was that. I actually had no more information that I could use than I had had the day before. Earth was going to be out fifty thousand cash, and I was going to be out more than that if I didn't watch myself.

"Come into the living room and have a drink, Bran," Fellister said smoothly. "I imagine it's been somewhat of a shock to see the general. I know that it was for me, the first time I was told about his rescue."

"He looks in good health," I said, as I followed him into the main room.

"Doesn't he?" Fellister agreed. "The man has a remarkable constitution. Here, sit down." He chuckled. "I'll have to be more careful how I treat you from now on; you may be my superior some day." He handed me a drink. "Take this; you look a little shaky."

I was. I had just spoken to the man who had personally executed Gianovin's order to dust off Polska. I wanted to kill him.

While I picked up the drink, Fellister shoved the check across the table. "You might as well sign this now, it will—"

His voice trailed off, and his eyes got wide. He was looking over my shoulder.

I had heard the door open. I turned slowly.

Standing there was a four-man squad in the uniform of the Prince's Own Guard, their guns leveled at us.

"You, Fellister dek Romin, and you, Bran dek Volin, are under arrest on the charge of high treason," said the sergeant in charge. "You have your choice of coming quietly or being carried." He waved the stun gun in his hand.

"We'll come quietly," I said.

Fellister didn't say anything; he just looked pale from fright.

The man I knew as Henry Bergaust sat behind his desk and rubbed his hands together in a pleased, self-satisfied fashion.

"We rounded them all up neatly, thanks to you, Mr. Poulter," he said.

"I still don't see how," I told him. "How did you know where General Thorgan was?"

"We didn't until he called you—or, rather, until Fellister called him. Subwave transmitters aren't as untraceable as most people think; Earth's technology, as you said, is a little ahead of the rest of the galaxy.

"He was actually here in the city, right under our noses. Amazing man! He ought to do quite well in penal servitude."

I didn't quite follow that, but I had another question I wanted answered. "I thought you said he would have had himself physically altered by now. How come he hadn't?"

"He had," said Bergaust. "He was wearing a pseudoflesh mask, just as Bran dek Volin was. Clever, eh? Disguise yourself as yourself for the dirty work. He had built up another identity here in the city. A moderately successful lawyer. Amazing man!"

There was a chime from somewhere on his desk. He punched a button and listened to a sonobeam that hit his ears. Then he looked up at me.

"There's a gentleman here who wants to thank you in person for what you have done for Suadin. And I think he wants to apologize."

I didn't understand that, and I told Bergaust so, but he just smiled and spoke into the communicator. "I will be happy to receive him," he said.

Half a minute later, I got the shock of my life.

His Serene Highness, Adelfi, Prince of Suadin stepped into the room. Automatically, I went to one knee.

"Rise, Mr. Poulter," said the prince. "The service you have done us this day entitles you to sit in our presence. Please do so."

I did so. The prince turned to Bergaust. "How long will it be before my new Lord Secretary will be able to go to work?"

"In about ten days, Your Serenity," Bergaust said easily.

"Good. Suadin has needed him for ten years."

I looked at His Serenity's face. It was anything but serene. It was noble and yet haggard, careworn, and unhappy, as though the burdens of all humanity had been borne by the mind behind that face. For a moment, I wondered where I had seen a face like that before—then I remembered. The look was the same as that on the face of ancient Earth paintings I had seen. It was the tortured look of Christ on the Cross.

Slowly, a dim light began to dawn in the back of my brain.

"Your new Lord Secretary?" I asked. "You mean General Thugagar Thorgan?"

His Serenity nodded. "Yes. Although, of course, he's made it easier for us. I'll simply appoint a certain lawyer named Bayless dek Lymer to the post."

I looked at Bergaust. "I thought you said he'd get penal servitude for life."

He started to answer, but the prince interrupted him.

"Mr. Poulter," he said, "I'm afraid you don't have any conception of what penal servitude is. Do you know what a conscience is, Mr. Poulter?"

"I know I have one, Your Serenity."

"We all have one," said the prince. "But some people have been able to smother it. I don't know enough about the psychological techniques evolved on Earth to be able to explain how it's done, but it is possible to strip off all the layers of mental camouflage that have smothered the conscience and expose it, naked and unadorned, to the view of the owner. It is a terrifying experience, Mr. Poulter."

Bergaust said: "Your Serenity has your own terms for the phenomenon. We simply refer to it as giving a man a sense of ethics."

"Call it what you will," said Prince Adelfi, "it is the most terrible, and at the same time the most wonderful thing that can happen to a human being who has spent his life destructively." The prince looked back at me. "Mr. Poulter, I assure you that my new Lord Secretary's punishment will be infinitely worse than any sort of physical labor you could dream up. He will, you see, spend the rest of his life trying to atone for the damage he has done to himself and to others."

"How can he make up for the dusting of Polska?" I asked.

The prince closed his eyes in pain. "He can't. Not ever. And he will know that. And he will know that he must try to make up for it, nevertheless." He opened his eyes again, and their pain-filled depths were terrible to see.

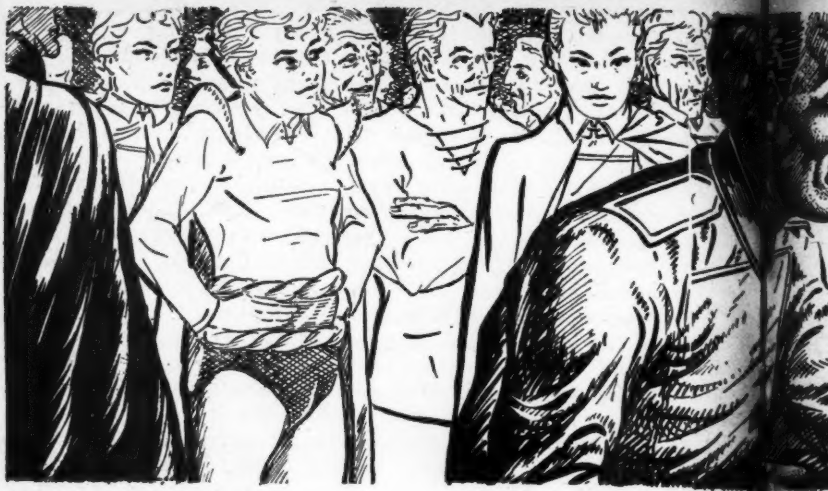
"To be forced by one's conscience to work forever to undo something that cannot be undone—that, Mr. Poulter, is penal servitude.

"No, the dusting of Polska can never be atoned for—but we must try, Thorgan and I."

*Thorgan and I.*

And then I knew. And for the first time, I felt sorry for Thugagar Thorgan and Gianovin t'Lhast.

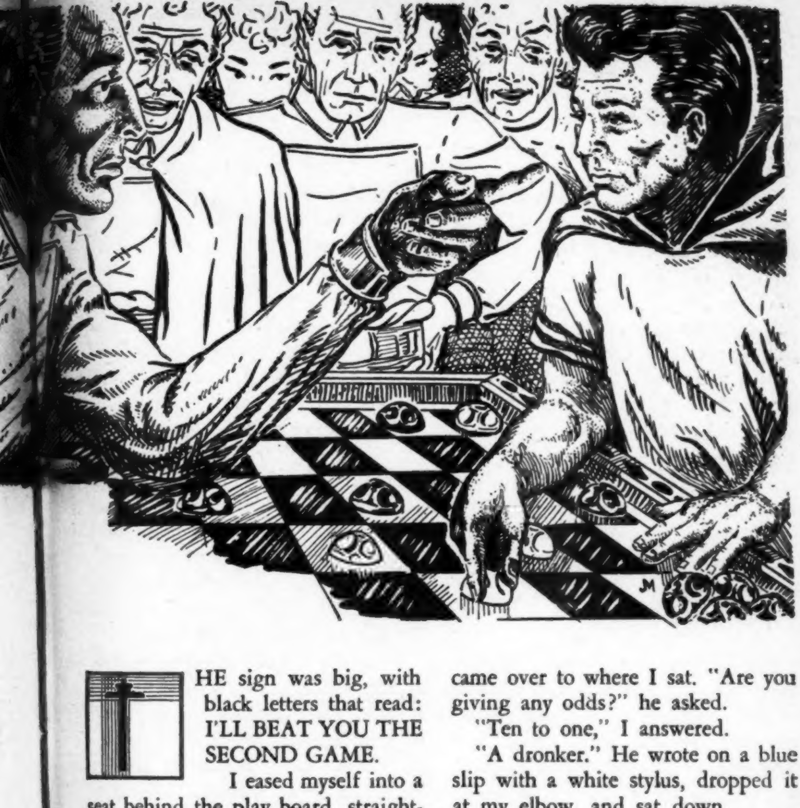
THE END



# SECOND GAME

### BY
### CHARLES V. DE VET
### and KATHERINE MACLEAN

***A game is over and finished when the play is done. But real-world living isn't like that. It isn't enough to win... you have to keep on winning, or it doesn't count at all....***



THE sign was big, with black letters that read: I'LL BEAT YOU THE SECOND GAME.

I eased myself into a seat behind the play board, straightened the pitchman's cloak about my shoulders, took a final deep breath, let it out—and waited.

A nearby Fair visitor glanced at the sign as he hurried by. His eyes widened with anticipated pleasure and he shifted his gaze to me, weighing me with the glance.

I knew I had him.

The man changed direction and came over to where I sat. "Are you giving any odds?" he asked.

"Ten to one," I answered.

"A dronker." He wrote on a blue slip with a white stylus, dropped it at my elbow, and sat down.

"We play the first game for feel," I said. "Second game pays."

Gradually I let my body relax. Its weight pulled at the muscles of my back and shoulders, and I slouched into a half-slump. I could feel my eyelids droop as I released them, and the corners of my mouth pulled down. I probably appeared tired and melancholy. Or like a man operating in a gravity heavier than was normal for him. Which I was.

I had come to this world called Velda two weeks earlier. My job was to find why its humanlike inhabitants refused all contacts with the Federation.

Earth's colonies had expanded during the last several centuries until they now comprised a loose alliance known as The Ten Thousand Worlds. They were normally peaceful—and wanted peace with Velda. But you cannot talk peace with a people who won't talk back. Worse, they had obliterated the fleet bringing our initial peace overtures. As a final gesture I had been smuggled in—in an attempt to breach that stand-off stubbornness. This booth at their Fair was my best chance—as I saw it—to secure audience with the men in authority. And with luck it would serve a double purpose.

Several Veldians gathered around the booth and watched with interest as my opponent and I chose colors. He took the red; I the black. We arranged our fifty-two pieces on their squares and I nodded to him to make the first move.

He was an anemic oldster with an air of nervous energy, and he played the same way, with intense concentration. By the fourth move I knew he would not win. On each play he had to consult the value board suspended between us before deciding what his next move would be. On a play board with one hundred and sixty-nine squares, each with a different value—in fact one set of values for offense, and another for defense—only a brilliant player could keep them all in mind. But no man without that ability was going to beat me.

I let him win the first game. Deliberately. The "second game counts" gimmick was not only to attract attention, but to give me a chance to test a player's strength—and find his weakness.

At the start of the second game, the oldster moved his front row center pukt three squares forward and one left oblique. I checked it with an end pukt, and waited.

The contest was not going to be exacting enough to hold my complete attention. Already an eidetic portion of my mind—which I always thought of as a small machine, ticking away in one corner of my skull, independent of any control or direction from me—was moving its interest out to the spectators around my booth.

It caught a half-completed gesture of admiration at my last move from a youth directly ahead of me. And with the motion, and the glimpse of the youth's face, something slipped into place in my memory. Some subconscious counting finished itself, and I knew that there had been too many of these youths, with faces like this one, finely boned and smooth, with slender delicate necks and slim hands and movements that were cool and detached. Far too many to be a normal number in a population of adults and children.

As if drawn, my glance went past the forms of the watchers around the booth and plumbed the passing crowd to the figure of a man; a magnificent masculine type of the Veldian race, thick shouldered and strong, thoughtful in motion, yet with something of the swagger of a gladiator, who, as he walked, spoke to the woman who held his arm, leaning toward her cherishingly as if he protected a great prize.

She was wearing a concealing cloak, but her face was beautiful, her hair semi-long, and in spite of the cloak I could see that her body was full-fleshed and almost voluptuously feminine. I had seen few such women on Velda.

Two of the slim, delicately built youths went by arm in arm, walking with a slight defiant sway of bodies, and looked at the couple as they passed, with a pleasure in the way the man's fascinated attention clove to the woman, and looked at the beauty of the woman possessively without lust, and passed by, their heads held higher in pride as if they shared a secret triumph with her. Yet they were strangers.

I had an answer to my counting. The "youths" with the large eyes and smooth delicate heads, with the slim straight asexual bodies, thought of themselves as women. I had not seen them treated with the subdued attraction and conscious avoidance one sex gives another, but by numbers . . . My memory added the number of these "youths" to the numbers of figures and faces that had been obviously female. It totaled to almost half the population I had seen. No matter what the biological explanation, it seemed reasonable that half . . .

I bent my head, to not see the enigma of the boy-woman face watching me, and braced my elbow to steady my hand as I moved. For two weeks I had been on Velda and during the second week I had come out of hiding and passed as a Veldian. It was incredible that I had been operating under a misunderstanding as to which were women, and which men, and not blundered openly. The luck that had saved me had been undeserved.

Opposite me, across the board, the bleach-skinned hand of the oldster was beginning to waver with indecision as each pukt was placed. He was seeing defeat, and not wishing to see it.

In eight more minutes I completed the route of his forces and closed out the game. In winning I had lost only two pukts. The other's defeat was crushing, but my ruthlessness had been deliberate. I wanted my reputation to spread.

My sign, and the game in progress, by now had attracted a line of challengers, but as the oldster left the line broke and most of them shook their heads and moved back, then crowded around the booth and good-naturedly elbowed their way to positions of better vantage.

I knew then that I had set my lure with an irresistible bait. On a world where the Game was played from earliest childhood—was in fact a vital aspect of their culture—my challenge could not be ignored. I pocketed the loser's blue slip and nodded to the first in line of the four men who still waited to try me.

This second man played a better game than the old one. He had a fine tight-knit offensive, with a good grasp of values, but his weakness showed early in the game when I saw him hesitate before making a simple move in a defensive play. He was not skilled in the strategy of retreat and defense, or not suited to it by temperament. He would be unable to cope with a swift forward press, I decided.

I was right.

Some of the challengers bet more, some less, all lost on the second game. I purchased a nut and fruit confection from a passing food vender and ate it for a sparse lunch while I played through the late afternoon hours.

By the time Velda's distant sun had begun to print long shadows across the Fair grounds, I was certain that word of my booth had spread well.

The crowd about the railing of my stand was larger—but the players were fewer. Sometimes I had a break of several minutes before one made a decision to try his skill. And there were no more challenges from ordinary players. Still the results were the same. None had sufficient adroitness to give me more than a passing contest.

Until Caertin Vlosmin made his appearance.

Vlosmin played a game intended to be impregnably defensive, to remain untouchable until an opponent made a misplay or an overzealous drive, of which he would then take advantage. But his mental prowess was not quite great enough to be certain of a sufficiently concealed or complex weakness in the approach of an adversary, and he would not hazard an attack on an uncertainty. Excess caution was his weakness.

During our play I sensed that the crowd about us was very intent and still. On the outskirts, newcomers inquiring cheerfully were silenced by whispered exclamations.

Though it required all my concentration the game was soon over. I looked at Vlosmin as he rose to his feet, and noted with surprise that a fine spotting of moisture brightened his upper lip. Only then did I recognize the strain and effort he had invested into the attempt to defeat me.

"You are an exceptional craftsman," he said. There was a grave emphasis he put on the "exceptional" which I could not miss, and I saw that his face was whiter.

His formal introduction of himself earlier as "Caertin Vlosmin" had meant something more than I had realized at the time.

I had just played against, and defeated, one of the Great Players!

The sun set a short time later and floating particles of light-reflecting air-foam drifted out over the Fair grounds. Someway they were held suspended above the ground while air currents tossed them about and intermingled them in the radiance of vari-hued spotlights. The area was still as bright as day, but filled with pale, shifting, shadows that seemed to heighten the byplay of sound and excitement coming from the Fair visitors.

Around my booth all was quiet; the spectators were subdued—as though waiting for the next act in a tense drama. I was very tired now, but I knew by the tenseness I observed around me that I did not have much longer to wait.

By the bubbles' light I watched new spectators take their positions about my booth. And as time went by I saw that some of them did not move on, as my earlier visitors had done.

The weight that rode my stomach muscles grew abruptly heavier. I had set my net with all the audacity of a spider waiting for a fly, yet I knew that when my anticipated victim arrived he would more likely resemble a spider hawk. Still the weight was not caused by fear: It was excitement—the excitement of the larger game about to begin.

I was playing an opponent of recognizably less ability than Vlosmin when I heard a stirring and murmuring in the crowd around my stand. The stirring was punctuated by my opponent rising to his feet.

I glanced up.

The big man who had walked into my booth was neither arrogant nor condescending, yet the confidence in his manner was like an aura of strength. He had a deep reserve of vitality, I noted as I studied him carefully, but it was a leashed, controlled vitality. Like most of the men of the Veldian race he wore a uniform, cut severely plain, and undecorated. No flowing robes or tunics for these men. They were a warrior race, unconcerned with the aesthetic touches of personal dress, and left that strictly to their women.

The newcomer turned to my late opponent. His voice was impressive, controlled. "Please finish your game," he said courteously.

The other shook his head. "The game is already as good as over. My sword is broken. You are welcome to my place."

The tall man turned to me. "If you don't mind?"

"My pleasure," I answered. "Please be seated."

This was it.

My visitor shrugged his close wrapped cloak back from his shoulders and took the chair opposite me. "I am Kalin Trobt," he said. As if he knew I had been expecting him.

In reply I came near to telling him my correct name. But Robert O. Lang was a name that would have been alien to Velda. Using it would have been as good as a confession. "Claustil Anteer," I said, giving a name I had invented earlier.

We played the first game as children play it, taking each other's pukts as the opportunity presented, making no attempt at finesse. Trobt won, two up. Neither of us had made mention of a wager. There would be more than money involved in this Game.

I noticed, when I glanced up before the second game, that the spectators had been cleared from around the booth. Only the inner, unmoving, ring I had observed earlier remained now. They watched calmly—professionally.

Fortunately I had no intention of trying to escape.

During the early part of the second game Trobt and I tested each other carefully, as skilled swordsmen, probing, feinting, and shamming attack, but never actually exposing ourselves. I detected what could have been a slight tendency to gamble in Trobt's game, but there was no concrete situation to confirm it.

My first moves were entirely passive. Alertly passive. If I had judged correctly the character of the big man opposite me, I had only to ignore the bait he offered to draw me out, to disregard his openings and apparent—too apparent—errors, until he became convinced that I was unshakably cautious, and not to be tempted into making the first thrusts. For this was his weakness as I had guessed it: That his was a gambling temperament—that when he saw an opportunity he would strike—without the caution necessary to insure safety.

Pretending to move with timidity, and pausing with great deliberation over even the most obvious plays, I maneuvered only to defend. Each time Trobt shifted to a new position of attack I covered—until finally I detected the use of slightly more arm force than necessary when he moved a pukt. It was the only sign of impatience he gave, but I knew it was there.

Then it was that I left one—thin—opening.

Trobt streaked a pukt through and cut out one of my middle defenders.

Instead of making the obvious counter of taking his piece, I played a pukt far removed from his invading man. He frowned in concentration, lifted his arm—and his hand hung suspended over the board.

Suddenly his eyes widened. His glance swept upward to my face and what he saw there caused his expression to change to one of mingled dismay and astonishment. There was but one move he could make. When he made it his entire left flank would be exposed. He had lost the game.

Abruptly he reached forward, touched his index finger to the tip of my nose, and pressed gently.

After a minute during which neither of us spoke, I said, "You know?"

He nodded. "Yes," he said. "You're a Human."

There was a stir and rustle of motion around me. The ring of spectators had leaned forward a little as they heard his words. I looked up and saw that they were smiling, inspecting me with curiosity and something that could have been called admiration. In the dusk the clearest view was the ring of teeth, gleaming

—the view a rabbit might get of a circle of grinning foxes. Foxes might feel friendly toward rabbits, and admire a good big one. Why not?

I suppressed an ineffectual impulse to deny what I was. The time was past for that. "How did you find out?" I asked Trobt.

"Your Game. No one could play like that and not be well known. And now your nose."

"My nose?" I repeated.

"Only one physical difference between a Human and a Veldian is apparent on the surface. The nose cartilage. Yours is split—mine is single." He rose to his feet. "Will you come with me, please?"

It was not a request.

My guards walked singly and in couples, sometimes passing Trobt and myself, sometimes letting us pass them, and sometimes lingering at a booth, like any other walkers, and yet, unobtrusively they held me encircled, always in the center of the group. I had already learned enough of the Veldian personality to realize that this was simply a habit of tact. Tact to prevent an arrest from being conspicuous, so as not to add the gaze of his fellows to whatever punishment would be decided for a culprit's offense. Apparently they considered humiliation too deep a punishment to use indiscriminately.

At the edge of the Fair grounds some of the watchers bunched around me while others went to get the tricars. I stood and looked across the park to the City. That was what it was called, The City, The Citadel, The Hearthplace, the home place where one's family is kept safe, the sanctuary whose walls have never been pierced. All those connotations had been in the name and the use of the name; in the voices of those who spoke it. Sometimes they called it The Hearth, and sometimes The Market, always *The* as if it were the only one.

Though the speakers lived in other places and named them as the homes of their ancestors, most of the Veldians were born here. Their history was colored, I might say even shaped, by their long era of struggle with the dleeth, a four-footed, hairy carnivora, physically little different from the big cats of Earth, but intelligent. They had battled the Veldians in a struggle for survival from the Veldians' earliest memories until a couple centuries before my visit. Now the last few surviving dleeth had found refuge in the frigid region of the north pole. With their physical superiority they probably would have won the struggle against the Veldians, except that their instincts had been purely predatory, and they had no hands and could not develop technology.

The City had been the one strong point that the dleeth had never been able to breach. It had been held by one of the stronger clans, and there was seldom unity among the tribes, yet any family about to bear a child was given sanctuary within its walls.

The clans were nomads—made so by the aggression of the dleeth—but they always made every effort to reach The City when childbirth was imminent. This explained, at least partly, why even strangers from foreign areas regarded The City as their home place.

I could see the Games Building from where I stood. In the walled city called Hearth it was the highest point. Big and red, it towered above the others, and the city around it rose to it like a wave, its consort of surrounding smaller buildings matched to each other in size and shape in concentric rings. Around each building wound the ramps of elevator runways, harmonious and useful, each of different colored stone, lending variety and warmth. Nowhere was there a clash of either proportion or color. Sometimes I wondered if the Veldians did not build more for the joy of creating symmetry, than because of utilitarian need.

I climbed into Trobt's three-wheeled car as it stopped before me, and the minute I settled into the bucket seat and gripped the bracing handles, Trobt spun the car and it dived into the highway and rushed toward the city. The vehicle seemed unstable, being about the width of a motor bike, with side car in front, and having nothing behind except a metal box that must have housed a powerful battery, and a shaft with the rear wheel that did the steering. It was an arrangement that made possible sudden wrenching turns that were battering to any passenger as unused to it as I. To my conditioning it seemed that the Veldians on the highway drove like madmen, the traffic rules were incomprehensible or nonexistent, and all drivers seemed determined to drive only in gull-like sweeping lines, giving no obvious change of course for other such cars, brushing by tricars from the opposite direction with an inch or less of clearance.

Apparently the maneuverability of the cars and the skill of the drivers were enough to prevent accidents, and I had to force my totally illogical drivers' reflexes to relax and stop tensing against the nonexistent peril.

I studied Trobt as he drove, noting the casual way he held the wheel, and the assurance in the set of his shoulders. I tried to form a picture in my mind of the kind of man he was, and just what were the motivations that would move or drive him.

Physically he was a long-faced man, with a smooth muscular symmetry, and an Asiatic cast to his eyes. I was certain that he excelled at whatever job he held. In fact I was prepared to believe that he would excell at anything he tried. He was undoubtedly one of those amazing men for whom the exceptional was mere routine. If he were to be cast in the role of my opponent: be the person in whom the opposition of this race would be actualized—as I now anticipated—I would not have wanted to bet against him.

The big skilled man was silent for several minutes, weaving the tricar with smooth swerves through a three-way tangle at an intersection, but twice he glanced at my expression with evident curiosity. Finally, as a man would state an obvious fact he said, "I presume you know you will be executed."

Trobt's face reflected surprise at the shock he must have read in mine. I had known the risk I would be taking in coming here, of course, and of the very real danger that it might end in my death. But this had come up on me too fast. I had not realized that the affair had progressed to the point where my death was already assured. I had thought that there would be negotiations, consultations, and perhaps ultimatums. But only if they failed did I believe that the repercussions might carry me along to my death.

However, there was the possibility that Trobt was merely testing my courage. I decided on boldness. "No," I said. "I do not expect to be executed."

Trobt raised his eyebrows and slowed, presumably to gain more time to talk. With a sudden decision he swung the tricar from the road into one of the small parks spread at regular intervals along the highway.

"Surely you don't think we would let you live? There's a state of war between Velda and your Ten Thousand Worlds. You admit that you're Human, and obviously you are here to spy. Yet when you're captured, you do not expect to be executed?"

"Was I captured?" I asked, emphasizing the last word.

He pondered on that a moment, but apparently did not come up with an answer that satisfied him. "I presume your question means something," he said.

"If I had wanted to keep my presence here a secret, would I have set up a booth at the Fair and invited inspection?" I asked.

He waved one hand irritably, as though to brush aside a picayune argument. "Obviously you did it to test yourself against us, to draw the great under your eye, and perhaps become a friend, treated as an equal with access to knowledge of our plans and weapons. Certainly! Your tactic drew two members of the Council into your net before it was understood. If we had accepted you as a previously unknown Great, you would have won. You are a gambling man, and you played a gambler's hand. You lost."

Partly he was right.

"My deliberate purpose was to reach you," I said, "or someone else with sufficient authority to listen to what I have to say."

Trobt pulled the vehicle deeper into the park. He watched the cars of our escort settling to rest before and behind us. I detected a slight unease and rigidity in his stillness as he said, "Speak then. I'm listening."

"I've come to negotiate," I told him.

Something like a flash of puzzlement crossed his features before they returned to tighter immobility. Unexpectedly he spoke in *Earthian*, my own language. "Then why did you choose this method? Would it not have been better simply to announce yourself?"

This was the first hint he had given that he might have visited our Worlds before I visited his. Though we had suspected before I came that some of them must have. They probably knew of our existence years before we discovered them.

Ignoring his change of language, I replied, still speaking Veldian, "Would it have been that simple? Or would some minor official, on capturing me, perhaps have had me imprisoned, or tortured to extract information?"

Again the suppressed puzzlement in the shift of position as he looked at me. "They would have treated you as an envoy, representing your Ten Thousand Worlds. You could have spoken to the Council immediately." He spoke in Veldian now.

"I did not know that," I said. "You refused to receive our fleet envoys; why should I expect you to accept me any more readily?"

Trobt started to speak, stopped, and turned in his seat to regard me levelly and steadily, his expression unreadable. "Tell me what you have to say then. I will judge whether or not the Council will listen."

"To begin with—" I looked away from the expressionless eyes, out the windshield, down the vistas of brown short trees that grew between each small park and the next. "Until an exploring party of ours found signs of extensive mining operations on a small metal-rich planet, we knew nothing of your existence. We were not even aware that another race in the galaxy had discovered faster than light space travel. But after the first

clue we were alert for other signs, and found them. Our discovery of your planet was bound to come. However, we did not expect to be met on our first visit with an attack of such hostility as you displayed."

"When we learned that you had found us," Trobt said, "we sent a message to your Ten Thousand Worlds, warning them that we wanted no contact with you. Yet you sent a fleet of spaceships against us."

I hesitated before answering. "That phrase, 'sent against us,' is hardly the correct one," I said. "The fleet was sent for a diplomatic visit, and was not meant as an aggressive action." I thought, *But obviously the display of force was intended "diplomatically" to frighten you people into being polite.* In diplomacy the smile, the extended hand—and the big stick visible in the other hand—had obviated many a war, by giving the stranger a chance to choose a hand, in full understanding of the alternative. *We showed our muscle to your little planet—you showed your muscle. And now we are ready to be polite.*

I hoped these people would understand the face-saving ritual of negotiation, the disclaimers of intent, that would enable each side to claim that there had been no war, merely accident.

"We did not at all feel that you were justified in wiping the fleet from space," I said. "But it was probably a legitimate misunderstanding—"

"You had been warned!" Trobt's voice was grim, his expression not inviting of further discussion. I thought I detected a bunching of the muscles in his arms.

For a minute I said nothing, made no gesture. Apparently this angle of approach was unproductive — and probably explosive. Also, trying to explain and justify the behavior of the Federation politicos could possibly become rather taxing.

"Surely you don't intend to postpone negotiations indefinitely?" I asked tentatively. "One planet cannot conquer the entire Federation."

The bunched muscles of his arms strained until they pulled his shoulders, and his lips whitened with the effort of controlling some savage anger. Apparently my question had impugned his pride.

This, I decided quickly, was not the time to make an enemy. "I apologize if I have insulted you," I said in Earthian. "I do not yet always understand what I am saying, in your language."

He hesitated, made some kind of effort, and shifted to Earthian. "It is not a matter of strength, or weakness," he said, letting his words ride out on his released breath, "but of behavior, courtesy. We would have left you alone, but now it is too late. We will drive your faces into the ground. I am certain that we can, but if we could not, still we would try. To imply that we would not try, from fear, seems to me words to soil the mouth, not worthy of a man speaking to a man. We are converting our ships of commerce to war. Your people will see soon that we will fight."

"Is it too late for negotiation?" I asked.

His forehead wrinkled into a frown and he stared at me in an effort of concentration. When he spoke it was with a considered hesitation. "If I make a great effort I can feel that you are sincere, and not speaking to mock or insult. It is strange that beings who look so much like ourselves can"—he rubbed a hand across his eyes—"pause a moment. When I say 'yag loogt'-n'balt' what does it mean to you in Earthish?"

"I must play." I hesitated as he turned one hand palm down, signifying that I was wrong. "I must duel," I said, finding another meaning in the way I had heard the phrase expressed. It was a strong meaning, judging by the tone and inflection the speaker had used. I had mimicked the tone without full understanding. The verb was perhaps stronger than *must*, meaning something inescapable, fated, but I could find no Earthian verb for it. I understood why Trobt dropped his hand to the seat without turning it palm up to signify that I was correct.

"There may be no such thought on the Human worlds," he said resignedly. "I have to explain as to a child or a madman. I cannot explain in Veldian, for it has no word to explain what needs no explanation."

He shifted to Earthian, his controlled voice sounding less controlled when moving with the more fluid inflections of my own tongue. "We said we did not want further contact. Nevertheless you sent the ships—deliberately in disregard of our expressed desire. That was an insult, a deep insult, meaning we have not strength to defend our word, meaning we are so helpless that we can be treated with impoliteness, like prisoners, or infants.

"Now we must show you which of us is helpless, which is the weakling. Since you would not respect our wishes, then in order to be not-further-insulted we must make of your people a captive or a child in helplessness, so that you will be without power to affront us another time."

"If apologies are in order—"

He interrupted with raised hand, still looking at me very earnestly with forehead wrinkled, thought half turned inward in difficult introspection of his own meaning, as well as a grasping for my viewpoint.

"The insult of the fleet can only be wiped out in the blood of testing—of battle—and the test will not stop until one or the other shows that he is too weak to struggle. There is no other way."

He was demanding total surrender!

I saw it was a subject that could not be debated. The Federation had taken on a bearcat this time!

"I stopped because I wanted to understand you," Trobt resumed. "Because the others will not understand how you could be an envoy—

how your Federation could send an envoy—except as an insult. I have seen enough of Human strangeness to be not maddened by the insolence of an emissary coming to us, or by your people expecting us to exchange words when we carry your first insult still unwashed from our face. I can even see how it could perhaps be considered *not* an insult, for I have seen your people living on their planets and they suffered insult from each other without striking, until finally I saw that they did not know when they were insulted, as a deaf man does not know when his name is called."

I listened to the quiet note of his voice, trying to recognize the attitude that made it different from his previous tones—calm and slow and deep. Certainty that what he was saying was important . . . conscious tolerance . . . generosity.

Trobt turned on the tricar's motor and put his hands on the steering shaft. "You are a man worthy of respect," he said, looking down the dark empty road ahead. "I wanted you to understand us. To see the difference between us. So that you will not think us without justice." The car began to move.

"I wanted you to understand why you will die."

I said nothing—having nothing to say. But I began immediately to bring my report up to date, recording the observations during the games, and recording with care this last conversation, with the explanation it carried of the Veldian reactions that had been previously obscure.

I used nerve-twitch code, "typing" on a tape somewhere inside myself the coded record of everything that had passed since the last time I brought the report up to date. The typing was easy, like flexing a finger in code jerks, but I did not know exactly where the recorder was located. It was some form of transparent plastic which would not show up on X ray. The surgeons had imbedded it in my flesh while I was unconscious, and had implanted a mental block against my noticing which small muscle had been linked into the contrivance for the typing.

If I died before I was able to return to Earth, there were several capsuled chemicals buried at various places in my body, that intermingled, would temporarily convert my body to a battery for a high powered broadcast of the tape report, destroying the tape and my body together. This would go into action only if my temperature fell fifteen degrees below the temperature of life.

I became aware that Kalin Trobt was speaking again, and that I had let my attention wander while recording, and tape some subjective material. The code twitches easily became an unconscious accompaniment to memory and thought, and this was the second time I had found myself recording more than necessary.

Trobt watched the dark road, threading among buildings and past darkened vehicles. His voice was thoughtful. "In the early days, Miklas of Danlee, when he had the Ornan family surrounded and outnumbered, wished not to destroy them, for he needed good warriors, and in another circumstance they could have been his friends. Therefore he sent a slave to them with an offer of terms of peace. The Ornan family had the slave skinned while alive, smeared with salt and grease so that he would not bleed, and sent back, tied in a bag of his own skin, with a message of no. The chroniclers agree that since the Ornan family was known to be honorable, Miklas should not have made the offer.

"In another time and battle, the Cheldos were offered terms of surrender by an envoy. Nevertheless they won against superior forces, and gave their captives to eat a stew whose meat was the envoy of the offer to surrender. Being given to eat their own words as you'd say in Earthish. Such things are not done often, because the offer is not given."

He wrenched the steering post sideways and the tricar turned almost at right angles, balanced on one wheel for a dizzy moment, and fled up a great spiral ramp winding around the outside of the red Games Building.

Trobt still looked ahead, not glancing at me. "I understand, from observing them, that you Earthians will lie without soiling the mouth. What are you here for, actually?"

"I came from interest, but I intend, given the opportunity, to observe and to report my observations back to my government. They should not enter a war without knowing anything about you."

"Good." He wrenched the car around another abrupt turn into a red archway in the side of the building, bringing it to a stop inside. The sound of the other tricars entering the tunnel echoed hollowly from the walls and died as they came to a stop around us. "You are a spy then."

"Yes," I said, getting out. I had silently resigned my commission as envoy some five minutes earlier. There was little point in delivering political messages, if they have no result except to have one skinned or made into a stew.

A heavy door with the seal of an important official engraved upon it opened before us. In the forepart of the room we entered, a slim-bodied creature with the face of a girl sat with crossed legs on a platform like a long coffee table, sorting vellum marked with the dots and dashes, arrows and pictures, of the Veldian language.

She had green eyes, honeyed-olive complexion, a red mouth, and purple black hair. She stopped to work an abacus, made a notation on one of the stiff sheets of vellum, then glanced up to see who had come in. She saw us, and glanced away again, as if she had coolly made a note of our presence and gone back to her work, sorting the vellum sheets and stacking them in thin shelves with quick graceful motions.

"Kalin Trobt of Pagael," a man on the far side of the room said, a man sitting cross-legged on a dais covered with brown fur and scattered papers. He accepted the hand Trobt extended and they gripped wrists in a locked gesture of friendship. "And how survive the other sons of the citadel of Pagael?"

"Well, and continuing in friendship to the house of Lyagin," Trobt replied carefully. "I have seen little of my kin. There are many farlanders all around us, and between myself and my hearthfolk swarm the adopted."

"It is not like the old days, Kalin Trobt. In a dream I saw a rock sink from the weight of sons, and I longed for the sight of a land that is without strangers."

"We are all kinfolk now, Lyagin."

"My hearth pledged it."

Lyagin put his hand on a stack of missives which he had been considering, his face thoughtful, sparsely fleshed, mostly skull and tendon, his hair bound back from his face, and wearing a short white cotton dress beneath a light fur cape.

He was an old man, already in his senility, and now he was lost in a lapse of awareness of what he had been doing a moment before. By no sign did Trobt show impatience, or even consciousness of the other's lapse.

Lyagin raised his head after a minute and brought his rheumy eyes into focus on us. "You bring someone in regard to an inquiry?" he asked.

"The one from the Ten Thousand Worlds," Trobt replied.

Lyagin nodded apologetically. "I received word that he would be brought," he said. "How did you capture him?"

"He came."

The expression must have had some connotation that I did not recognize for the official let his glance cross mine, and I caught one slight flicker of interest in his eyes. "You say these Humans lie?" he asked Trobt.

"Frequently. It is considered almost honorable to lie to an enemy in circumstances where one may profit by it."

"You brought back from his worlds some poison which insures their speaking the truth, I believe?"

"Not a poison, something they call drugs, which affects one like strong drink, dulling a man and changing what he might do. Under its influence he loses his initiative of decision."

"You have this with you?"

"Yes." Trobt was going to waste no time getting from me anything I had that might be of value to them.

"It will be interesting having an enemy co-operate," Lyagin said. "If he finds no way to kill himself, he can be very useful to us." So far my contact with the Veldians had not been going at all as I had hoped and planned.

The boy-girl at the opposite side of the room finished a problem on the abacus, noted the answer, and glanced directly at my face, at my expression, then locked eyes with me for a brief moment. When she glanced down to the vellum again it was as if she had seen whatever she had looked up to see, and was content. She sat a little straighter as she worked, and moved with an action that was a little less supple and compliant.

I believe she had seen me as a man.

During the questioning I made no attempt to resist the drug's influence. I answered truthfully—but literally. Many times my answers were undecidable—because I knew not the answers, or I lacked the data to give them. And the others were cloaked under a full literal subtlety that made them useless to the Veldians. Questions such as the degree of unity existing between the Worlds: I answered—truthfully—that they were united under an authority with supreme power of decision. The fact that that authority had no actual force behind it; that it was subject to the whims and fluctuations of sentiment and politics of intraalliances; that it had deteriorated into a mere supernumerary body of impractical theorists that occupied itself, in a practical sphere, only with picayune matters, I did not explain. It was not asked of me.

Would our Worlds fight? I answered that they would fight to the death to defend their liberty and independence. I did not add that that will to fight would evidence itself first in internecine bickering, procrastinations, and jockeying to avoid the worst thrusts of the enemy—before it finally resolved itself into a united front against attack.

By early morning Trobt could no longer contain his impatience. He stepped closer. "We're going to learn one thing," he said, and his voice was harsh. "Why did you come here?"

"To learn all that I could about you," I answered.

"You came to find a way to whip us!"

It was not a question and I had no necessity to answer.

"Have you found the way?"

"No."

"If you do, and you are able, will you use that knowledge to kill us?"

"No."

Trobt's eyebrows raised. "No?" he repeated. "Then why do you want it?"

"I hope to find a solution that will not harm either side."

"But if you found that a solution was not possible, you would be willing to use your knowledge to defeat us?"

"Yes."

"Even if it meant that you had to exterminate us—man, woman, and child?"

"Yes."

"Why? Are you so certain that you are right, that you walk with God, and that we are knaves?"

"If the necessity to destroy one civilization or the other arose, and the decision were mine to make, I would rule against you because of the number of sentient beings involved."

Trobt cut the argument out from under me. "What if the situation were reversed, and your side was in the minority? Would you choose to let them die?"

I bowed my head as I gave him the truthful answer. "I would choose for my own side, no matter what the circumstances."

The interrogation was over.

On the drive to Trobt's home I was dead tired, and must have slept for a few minutes with my eyes open. With a start I heard Trobt say, ". . . that a man with ability enough to be a games—chess—master is given no authority over his people, but merely consulted on occasional abstract questions of tactics."

"It is the nature of the problem." I caught the gist of his comment from his last words and did my best to answer it. I wanted nothing less than to engage in conversation, but I realized that the interest he was showing now was just the kind I had tried to guide him to, earlier in the evening. If I could get him to understand us better, our motivations and ideals, perhaps even our frailties, there would be more hope for a compatible meeting of minds. "Among peoples of such mixed natures, such diverse histories and philosophies, and different ways of life, most administrative problems are problems of a choice of whims, of changing and conflicting goals; not *how* to do what a people want done, but *what* they want done, and whether their next generation will want it enough to make work on it, now, worthwhile."

"They sound insane," Trobt said. "Are your administrators supposed to serve the flickering goals of demented minds?"

"We must weigh values. What is considered good may be a matter of viewpoint, and may change from place to place, from generation to generation. In determining what people feel and what their unvoiced wants are, a talent of strategy, and an impatience with the illogic of others, are not qualifications."

"The good is good, how can it change?" Trobt asked. "I do not understand."

I saw that truly he could not understand, since he had seen nothing of the clash of philosophies among a mixed people. I tried to think of ways it could be explained; how to show him that a people who let their emotions control them more than their logic, would unavoidably do many things they could not justify or take pride in—but that that emotional predominance was what had enabled them to grow, and spread throughout their part of the galaxy—and be, in the main, happy.

I was tired, achingly tired. More, the events of the long day, and Velda's heavier gravity had taken me to the last stages of exhaustion. Yet I wanted to keep that weakness from Trobt. It was possible that he, and the other Veldians, would judge the Humans by what they observed in me.

Trobt's attention was on his driving and he did not notice that I followed his conversation only with difficulty. "Have you had only the two weeks of practice in the Game, since you came?" he asked.

I kept my eyes open with an effort and breathed deeply. Velda's one continent, capping the planet on its upper third, merely touched what would have been a temperate zone. During its short summer its mean temperature hung in the low sixties. At night it dropped to near freezing. The cold night air bit into my lungs and drove the fog of exhaustion from my brain.

"No," I answered Trobt's question. "I learned it before I came. A chess adept wrote me, in answer to an article on chess, that a man from one of the outworlds had shown him a game of greater richness and flexibility than chess, with much the same feeling to the player, and had beaten him in three games of chess after only two games to learn it, and had said that on his own planet this chesslike game was the basis for the amount of authority with which a man is invested. The stranger would not name his planet.

"I hired an investigating agency to learn the whereabouts of this planet. There was none in the Ten Thousand Worlds. That meant that the man had been a very ingenious liar, or—that he had come from Velda."

"It was I, of course," Trobt acknowledged.

"I realized that from your conversation. The sender of the letter," I resumed, "was known to me as a chess champion of two Worlds. The matter tantalized my thoughts for weeks, and finally I decided to try to arrange a visit to Velda. If you had this game, I wanted to try myself against your skilled ones."

"I understand that desire very well," Trobt said. "The same temptation caused me to be indiscreet when I visited your Worlds. I have seldom been able to resist the opportunity for an intellectual gambit."

"It wasn't much more than a guess that I would find the Game on Velda," I said. "But the lure was too strong for me to pass it by."

"Even if you came intending to challenge, you had little enough time to learn to play as you have—against men who have spent lifetimes learning. I'd like to try you again soon, if I may."

"Certainly." I was in little mood or condition to welcome any further polite conversation. And I did not appreciate the irony of his request—to the best of my knowledge I was still under a sentence of early death.

Trobt must have caught the bleakness in my reply for he glanced quickly over his shoulder at me. "There will be time," he said, gently for him. "Several days at least. You will be my guest." I knew that he was doing his best to be kind. His decision that I must die had not been prompted by any meanness of nature: To him it was only—inevitable.

The next day I sat at one end of

a Games table in a side wing of his home while Trobt leaned against the wall to my left. "Having a like nature I can well understand the impulse that brought you here," he said. The supreme gamble. Playing—with your life the stake in the game. Nothing you've ever experienced can compare with it. And even now—when you have lost, and will die—you do not regret it, I'm certain."

"I'm afraid you're overestimating my courage, and misinterpreting my intentions," I told him, feeling instinctively that this would be a good time to again present my arguments. "I came because I hoped to reach a better understanding. We feel that an absolutely unnecessary war, with its resulting death and destruction, would be foolhardy. And I fail to see your viewpoint. Much of it strikes me as stupid racial pride."

Trobt ignored the taunt. "The news of your coming is the first topic of conversation in the City," he said. "The clans understand that you have come to challenge; one man against a nation. They greatly admire your audacity."

"Look," I said, becoming angry and slipping into Earthian. "I don't know whether you consider me a damn fool or not. But if you think I came here expecting to die; that I'm looking forward to it with pleasure—"

He stopped me with an idle gesture of one hand. "You deceive yourself if you believe what you say," he commented. "Tell me this: Would you have stayed away if you had known just how great the risk was to be?"

I was surprised to find that I did

not have a ready answer to his question.

"Shall we play?" Trobt asked.

We played three games; Trobt with great skill, employing diversified and ingenious attacks. But he still had that bit too much audacity in his execution. I won each time.

"You're undoubtedly a Master," Trobt said at the end of the third game. "But that isn't all of it. Would you like me to tell you why I can't beat you?"

"Can you?" I asked.

"I think so," he said. "I wanted to try against you again and again, because each time it did not seem that you had defeated me, but only that I had played badly, made childish blunders, and that I lost each game before we ever came to grips. Yet when I entered the duel against you a further time, I'd begin to blunder again."

He shoved his hands more deeply under his weapons belt, leaning back and observing me with his direct inspection. "My blundering then has to do with you, rather than myself," he said. "Your play is excellent, of course, but there is more beneath the surface than above. This is your talent: You lose the first game to see an opponent's weakness—and play it against him."

I could not deny it. But neither would I concede it. Any small advantage I might hold would be sorely needed later.

"I understand Humans a little," Trobt said. "Enough to know that very few of them would come to challenge us without some other purpose. They have no taste for death, with glory or without."

Again I did not reply.

"I believe," Trobt said, "that you came here to challenge in your own way, which is to find any weakness we might have, either in our military, or is some odd way, in our very selves."

Once again—with a minimum of help from me—he had arrived in his reasoning at a correct answer. From here on—against this man—I would have to walk a narrow line.

"I think," Trobt said more slowly, glancing down at the board between us, then back at my expression, "that this may be the First Game, and that you are more dangerous than you seem, that you are accepting the humiliation of allowing yourself to be thought of as weaker than you are, in actuality. You intend to find our weakness, and you expect somehow to tell your states what you find."

I looked across at him without moving. "What weakness do you fear I've seen?" I countered.

Trobt placed his hands carefully on the board in front of him and rose to his feet. Before he could say what he intended a small boy pulling something like a toy riding-horse behind him came into the game room and grabbed Trobt's trouser leg. He was the first blond child I had seen on Velda.

The boy pointed at the swords on the wall. "Da," he said beseechingly, making reaching motions. "Da."

Trobt kept his attention on me. After a moment a faint humorless smile moved his lips. He seemed to grow taller, with the impression a strong man gives when he remembers his strength. "You will find no weakness," he said. He sat down again and placed the child on his lap.

The boy grabbed immediately at the abacus hanging on Trobt's belt and began playing with it, while Trobt stroked his hair. All the Veldians dearly loved children, I had noticed.

"Do you have any idea how many of our ships were used to wipe out your fleet?" he asked abruptly.

As I allowed myself to show the interest I felt he put a hand on the boy's shoulder and leaned forward. "One," he said.

I very nearly called Trobt a liar—one ship obliterating a thousand—before I remembered that Veldians were not liars, and that Trobt obviously was not lying. Somehow this small under-populated planet had developed a science of weapons that vastly exceeded that of the Ten Thousand Worlds.

I had thought that perhaps my vacation on this Games-mad planet would result in some mutual information that would bring quick negotiation or conciliation: That players of a chesslike game would be easy to approach: That I would meet men intelligent enough to see the absurdity of such an ill-fated war against the overwhelming odds of the Ten Thousand Worlds Federation. Intelligent enough to foresee the disaster that would result from such a fight. It began to look as if the disaster might be to the Ten Thousand and not to the one.

Thinking, I walked alone in Trobt's roof garden.

Walking in Velda's heavy gravity took more energy than I cared to expend, but too long a period without exercise brought a dull ache to the muscles of my shoulders and at the base of my neck.

This was my third evening in the house. I had slept at least ten hours each night since I arrived, and found myself exhausted at day's end, unless I was able to take a nap or lie down during the afternoon.

The flowers and shrubbery in the garden seemed to feel the weight of gravity also, for most of them grew low, and many sent creepers out along the ground. Overhead strange formations of stars clustered thickly and shed a glow on the garden very like Earth's moonlight.

I was just beginning to feel the heavy drag in my leg tendons when a woman's voice said, "Why don't you rest a while?" It spun me around as I looked for the source of the voice.

I found her in a nook in the bushes, seated on a contour chair that allowed her to stretch out in a half-reclining position. She must have weighed near to two hundred—Earth-weight—pounds.

But the thing that had startled me

more than the sound of her voice was that she had spoken in the universal language of the Ten Thousand Worlds. And without accent!

"You're—?" I started to ask.

"Human," she finished for me.

"How did you get here?" I inquired eagerly.

"With my husband." She was obviously enjoying my astonishment. She was a beautiful woman, in a gentle bovine way, and very friendly. Her blond hair was done up in tight ringlets.

"You mean . . . Trobt?" I asked.

"Yes." As I stood trying to phrase my wonderment into more questions, she asked, "You're the Earthman, aren't you?"

I nodded. "Are you from Earth?"

"No," she answered. "My home world is Mandel's Planet, in the Thumb group."

She indicated a low hassock of a pair, and I seated myself on the lower and leaned an elbow on the higher, beginning to smile. It would have been difficult not to smile in the presence of anyone so contented. "How did you meet Trobt?" I asked.

"It's a simple love story. Kalin visited Mandel—without revealing his true identity of course—met, and courted me. I learned to love him, and agreed to come to his world as his wife."

"Did you know that he wasn't . . . That he . . ." I stumbled over just how to phrase the question. And wondered if I should have started it.

Her teeth showed white and even as she smiled. She propped a pillow under one plump arm and finished my sentence for me. ". . . That he wasn't Human?" I was grateful for the way she put me at ease—almost as though we had been old friends.

I nodded.

"I didn't know." For a moment she seemed to draw back into her thoughts, as though searching for something she had almost forgotten. "He couldn't tell me. It was a secret he had to keep. When I arrived here and learned that his planet wasn't a charted world, was not even Human, I was a little uncertain and lonesome. But not frightened. I knew Kalin would never let me be hurt. Even my lonesomeness left quickly. Kalin and I love each other very deeply. I couldn't be more happy than I am now."

She seemed to see I did not consider that my question had been answered—completely. "You're wondering still if I mind that he isn't Human, aren't you?" she asked. "Why should I? After all, what does it mean to be 'Human'? It is only a word that differentiates one group of people from another. I seldom think of the Veldians as being different—and certainly never that they're beneath me."

"Does it bother you—if you'll pardon this curiosity of mine—that you will never be able to bear Kalin's children?"

"The child you saw the first morning is my son," she answered complacently.

"But that's impossible," I blurted.

"Is it?" she asked. "You saw the proof."

"I'm no expert at this sort of thing," I said slowly, "but I've always understood that the possibility of two separate species producing offspring was a million to one."

"Greater than that, probably," she agreed. "But whatever the odds, sooner or later the number is bound to come up. This was it."

I shook my head, but there was no arguing a fact. "Wasn't it a bit unusual that Kalin didn't marry a Veldian woman?"

"He has married—two of them," she answered. "I'm his third wife."

"Then they do practice polygamy," I said. "Are you content with such a marriage?"

"Oh yes," she answered. "You see, besides being very much loved, I occupy a rather enviable position here. I, ah . . ." She grew slightly flustered. "Well . . . the other women —the Veldian women—can bear children only once every eight years, and during the other seven . . ." She hesitated again and I saw a tinge of red creep into her cheeks. She was obviously embarrassed, but she laughed and resolutely went on.

"During the other seven, they lose their feminine appearance, and don't think of themselves as women. While I . . ." I watched with amusement as her color deepened and her glance dropped. "I am always of the same sex, as you might say, always a woman. My husband is the envy of all his friends."

After her first reticence she talked freely, and I learned then the answer to the riddle of the boy-girls of Velda. And at least one reason for their great affection for children.

One year of fertility in eight . . .

Once again I saw the imprint of the voracious dleeth on this people's culture. In their age-old struggle with their cold planet and its short growing seasons—and more particularly with the dleeth—the Veldian women had been shaped by evolution to better fit their environment. The women's strength could not be spared for frequent childbearing—so childbearing had been limited. Further, one small child could be carried in the frequent flights from the dleeth, but not more than one. Nature had done its best to cope with the problem: In the off seven years she tightened the women's flesh, atrophying glands and organs—making them nonfunctional—and changing their bodies to be more fit to labor and survive—and to fight, if necessary. It was an excellent adaptation—for a time and environment where a low birth rate was an asset to survival.

But this adaptation had left only a narrow margin for race perpetuation. Each woman could bear only four children in her lifetime. That, I realized as we talked, was the reason why the Veldians had not colonized other planets, even though they had space flight—and why they probably never would, without a drastic change in their biological make-up. That left so little ground for a quarrel between them and the Ten Thousand Worlds. Yet here we were, poised to spring into a death struggle.

"You are a very unusual woman." My attention returned to Trobt's wife. "In a very unusual situation."

"Thank you," she accepted it as a compliment. She made ready to rise. "I hope you enjoy your visit here. And that I may see you again before you return to Earth."

I realized then that she did not know of my peculiar position in her home. I wondered if she knew even of the threat of war between us and her adopted people. I decided not, or she would surely have spoken of it. Either Trobt had deliberately avoided telling her, perhaps to spare her the pain it would have caused, or she had noted that the topic of my presence was disturbing to him and had tactfully refrained from inquiring. For just a moment I wondered if I should explain everything to her, and have her use the influence she must have with Trobt. I dismissed the idea as unworthy—and useless.

"Good night," I said.

The next evening as we rode in a tricar Trobt asked if I would like to try my skill against a better Games player.

"I had assumed you were the best," I said.

"Only the second best," he answered. "It would be interesting to compare your game with that of our champion. If you can whip him, perhaps we will have to revise our opinion of you Humans."

He spoke as though in jest, but I saw more behind his words than he intended me to see. Here at last might be a chance to do a positive service for my side. "I would be happy to play," I said.

Trobt parked the tricar on a side avenue and we walked perhaps a hundred yards. We stopped at the door of a small one-story stone house and Trobt tapped with his fingernails on a hollow gong buried in the wood.

After a minute a curtain over the door glass was drawn back and an old woman with straggly gray hair peered out at us. She recognized Trobt and opened the door.

We went in. Neither Trobt nor the old woman spoke. She turned her back after closing the door and went to stir embers in a stone grate.

Trobt motioned with his head for me to follow and led the way into a back room.

"Robert O. Lang," he said, "I would like you to meet Yondtl."

I looked across the room in the direction Trobt had indicated. My first impression was of a great white blob, propped up on a couch and supported by the wall at its back.

Then the thing moved. Moved its eyes. It was alive. Its eyes told me also that it was a man. If I could call it a man.

His head was large and bloated, with blue eyes, washed almost colorless, peering out of deep pouches of flesh. He seemed to have no neck; almost as though his great head were merely an extension of the trunk, and separated only by puffy folds of fat. Other lappings of flesh hung from his body in great thick rolls.

It took another minute of fascinated inspection before I saw that he had no arms, and that no legs reached from his body to the floor. The entire sight of him made me want to leave the room and be sick.

"Robert O. Lang is an Earthian who would challenge you, sir," Trobt addressed the monstrosity.

The other gave no sign that I could see but Trobt went to pull a Games table at the side of the room over toward us. "I will serve as his hands," Trobt said.

The pale blue eyes never left my face.

I stood without conscious thought until Trobt pushed a chair under me. Mentally I shook myself. With unsteady hands—I had to do something with them—I reached for the pukts before me. "Do you . . . do you have a choice . . . of colors, sir?" I stammered, trying to make up for my earlier rudeness of staring.

The lips of the monstrosity quivered, but he made no reply.

All this while Trobt had been watching me with amusement. "He is deaf and speechless," Trobt said. "Take either set. I will place the other before him."

Absently I pulled the red pieces toward me and placed them on their squares.

"In deference to you as a visitor, you will play 'second game counts,' " Trobt continued. He was still enjoying my consternation. "He always allows his opponent the first move. You may begin when you are ready."

With an effort I forced myself to concentrate on the playing board. My start, I decided, must be orthodox. I had to learn something of the type of game this . . . Yondtl . . . played. I moved the first row right hand pukt its two oblique and one left squares.

Yondtl inclined his head slightly. His lips moved. Trobt put his hand to a pukt and pushed it forward. Evidently Trobt read his lips. Very probably Yondtl could read ours also.

We played for almost an hour with neither of us losing a man.

I had tried several gambits; gambits that invited a misplay on Yondtl's part. But he made none. When he offered I was careful to make no mistakes of my own. We both played as though this first game were the whole contest.

Another hour went by. I deliberately traded three pukts with Yondtl, in an attempt to trick him into a misplay. None came.

I tried a single decoy gambit, and when nothing happened, followed with a second decoy. Yondtl countered each play. I marveled that he gave so little of his attention to the board. Always he seemed to be watching me. I played. He played. He watched me.

I sweated.

Yondtl set up an overt side pass that forced me to draw my pukts back into the main body. Somehow I received the impression that he was teasing me. It made me want to beat him down.

I decided on a crossed-force, double decoy gambit. I had never seen it employed. Because, I suspect, it is too involved, and open to error by its user. Slowly and painstakingly I set it up and pressed forward.

The Caliban in the seat opposite me never paused. He matched me play for play. And though Yondtl's features had long since lost the power of expression, his pale eyes seemed to develop a blue luster. I realized, almost with a shock of surprise, that the fat monstrosity was happy—intensely happy.

I came out of my brief reverie with a start. Yondtl had made an obvious play. I had made an obvious counter. I was startled to hear him sound a cry somewhere between a muffled shout and an idiot's laugh, and my attention jerked back to the board. I had lost the game!

My brief moment of abstraction had given Yondtl the opportunity to make a pass too subtle to be detected with part of my faculties occupied elsewhere.

I pushed back my chair. "I've had enough for tonight," I told Trobt. If I were to do the Humans a service, I would need rest before trying Yondtl in the second game.

We made arrangements to meet again the following evening, and let ourselves out. The old woman was nowhere in sight.

The following evening when we began play I was prepared to give my best. I was rested and eager. And I had a concrete plan. Playing the way I had been doing I would never beat Yondtl, I'd decided after long thought. A stand-off was the best I could hope for. Therefore the time had come for more consummate action. I would engage him in a triple decoy gambit!

I had no illusion that I could handle it—the way it should be handled. I doubt that any man, Human or Veldian, could. But at least I would play it with the greatest skill I had, giving my best to every move, and push the game up the scale of reason and involution—up and up—until either Yondtl or I became lost in its innumerable complexities, and fell.

As I attacked, the complexes and complications would grow gradually more numerous, become more and more difficult, until they embraced a span greater than one of us had the capacity to encompass, and the other would win.

The Game began and I forced it into the pattern I had planned. Each play, and each maneuver, became all important, and demanding of the greatest skill I could command. Each pulled at the core of my brain, dragging out the last iota of sentient stuff that writhed there. Yondtl stayed with me, complex gambit through complex gambit.

When the strain became too great I forced my mind to pause, to rest, and to be ready for the next clash. At the first break I searched the annotator. It was working steadily, with an almost smooth throb of efficiency, keeping the position of each pukt—

and its value—strong in the forefront of visualization. But something was missing!

A minute went by before I spotted the fault. The move of each pukt involved so many possibilities, so many avenues of choice, that no exact answer was predictable on any one. The number and variation of gambits open on every play, each subject to the multitude of Yondtl's counter moves, stretched the possibilities beyond prediction. The annotator was a harmonizing, perceptive force, but not a creative, initiating one. It operated in a statistical manner, similar to a computer, and could not perform effectively where a crucial factor or factors were unknown, or concealed, as they were here.

My greatest asset was negated.

At the end of the third hour I began to feel a steady pain in my temples, as though a tight metal band pressed against my forehead and squeezed it inward. The only reaction I could discern in Yondtl was that the blue glint in his eyes had become brighter. All his happiness seemed gathered there.

Soon my pauses became more frequent. Great waves of brain weariness had to be allowed to subside before I could play again.

And at last it came.

Suddenly, unexpectedly, Yondtl threw a pukt across the board and took my second decoy—and there was no way for me to retaliate! Worse, my entire defense was smashed.

I felt a kind of calm dismay. My shoulders sagged and I pushed the board away from me and slumped in my chair.

I was beaten.

The next day I escaped from Trobt. It was not difficult. I simply walked away.

For three days I followed the wall of the City, looking for a way out. Each gate was guarded. I watched unobserved and saw that a permit was necessary when leaving. If I found no other way I would make a run for it. The time of decision never came.

Meanwhile to obtain food I was forced into some contact with the City's people, and learned to know them better. Adding this new knowledge to the old I decided that I liked them.

Their manners and organization—within the framework of their culture—was as simple and effective as their architecture. There was a strong emphasis on pride, on strength and honor, on skill, and on living a dangerous life with a gambler's self-command, on rectitude, on truth, and the unbreakable bond of loyalty among family and friends. Lying, theft, and deceit were practically unknown.

I did detect what might have been a universal discontent in their young men. They had a warrior heritage and nature which, with the unity of the tribes and the passing of the dleeth—and no one to fight except themselves—had left them with an unrecognized futility of purpose.

They had not quite been able to achieve a successful sublimation of their post-warrior need to fight in the Games. Also, the custom of polygamy —necessary in the old days, and desired still by those able to attain it —left many sexually frustrated.

I weighed all these observations in my reactions to the Veldians, and toward the end a strange feeling—a kind of wistfulness—came as I observed. I felt kin to them, as if these people had much in common with myself. And I felt that it was too bad that life was not fundamentally so simple that one could discard the awareness of other ways of life, of other values and philosophies that bid against one another, and against one's attention, and make him cynical of the philosophy he lives by, and dies for. Too bad that I could not see and take life as that direct, and as that simple.

The third day I climbed a spiral ramp to the top of a tower that rose above the walls of Hearth and gazed out over miles of swirling red sand. Directly beneath me stretched a long concrete ribbon of road. On the road were dozens of slowly crawling vehicles that might have been caterpillar trucks of Earth!

In my mind the pattern clicked into place. Hearth was not typical of the cities of Velda!

It was an anachronism, a revered Homeplace, a symbol of their past, untainted by the technocracy that was pursued elsewhere. This was the capital city, from which the heads of the government still ruled, perhaps for sentimental reasons, but it was not typical.

My stay in Hearth was cut short when I ascended from the tower and found Trobt waiting for me.

As I might have expected, he showed no sign of anger with me for having fled into the City. His was the universal Veldian viewpoint. To them all life was the Game. With the difference that it was played on an infinitely larger board. Every man, and every woman, with whom the player had contact, direct or indirect, were pukts on the Board. The player made his decisions, and his plays, and how well he made them determined whether he won or lost. His every move, his every joining of strength with those who could help him, his every maneuver against those who would oppose him, was his choice to make, and he rose or fell on the wisdom of the choice. Game, in Velda, means Duel, means struggle and the test of man against the opponent, Life. I had made my escape as the best play as I saw it. Trobt had no recriminations.

The evening of the next day Trobt woke me. Something in his constrained manner brought me to my feet. "Not what you think," he said, "but we must question you again. We will try our own methods this time."

"Torture?"

"You will die under the torture, of course. But for the questioning it will not be necessary. You will talk."

The secret of their method was

very simple. Silence. I was led to a room within a room within a room. Each with very thick walls. And left alone. Here time meant nothing.

Gradually I passed from boredom to restlessness, to anxiety, briefly through fear, to enervating frustration, and finally to stark apathy.

When Trobt and his three accompanying guardsmen led me into the blinding daylight I talked without hesitation or consideration of consequences.

"Did you find any weakness in the Veldians?"

*"Yes."*

I noted then a strange thing. It was the annotator—the thing in my brain that was a part of me, and yet apart from me—that had spoken. It was not concerned with matters of emotion; with sentiments of patriotism, loyalty, honor, and self-respect. It was interested only in my—and its own—survival. Its logic told it that unless I gave the answers my questioner wanted I would die. That, it intended to prevent.

I made one last desperate effort to stop that other part of my mind from assuming control—and sank lower into my mental impotence.

"What is our weakness?"

*"Your society is doomed."* With the answer I realized that the annotator had arrived at another of its conclusions.

"Why?"

*"There are many reasons."*

"Give one."

*"Your culture is based on a need for struggle, for combat. When there is no one to fight it must fall."*

Trobt was dealing with a familiar culture now. He knew the questions to ask.

"Explain that last statement."

*"Your culture is based on its impetuous need to battle . . . it is armed and set against dangers and the expectation of danger . . . fostering the pride of courage under stress. There is no danger now . . . nothing to fight, no place to spend your over-aggressiveness, except against each other in personal duels. Already your decline is about to enter the bloody circus and religion stage, already crumbling in the heart while expanding at the outside. And this is your first civilization . . . like a boy's first love . . . you have no experience of a fall in your history before to have recourse to—no cushioning of philosophy to accept it . . ."*

For a time Trobt maintained a puzzled silence. I wondered if he had the depth of understanding to accept the truth and significance of what he had heard. "Is there no solution?" he asked at last.

*"Only a temporary one."* Now it was coming.

"Explain."

*"War with the Ten Thousand Worlds."*

"Explain."

*"Your willingness to hazard, and eagerness to battle is no weakness when you are armed with superior weapons, and are fighting against an opponent as disorganized, and as incapable of effective organization as the Ten Thousand Worlds, against your long-range weapons and subtle traps."*

"Why do you say the solution is only temporary?"

*"You cannot win the war. You will seem to win, but it will be an illusion. You will win the battles, kill billions, rape Worlds, take slaves, and destroy ships and weapons. But after that you will be forced to hold the subjection. Your numbers will not be expendable. You will be spread thin, exposed to other cultures that will influence you, change you. You will lose skirmishes, and in the end you will be forced back. Then will come a loss of old ethics, corruption and opportunism will replace your honor and you will know unspeakable shame and dishonor . . . your culture will soon be weltering back into a barbarism and disorganization which in its corruption and despair will be nothing like the proud tribal primitive life of its first barbarism. You will be aware of the difference and unable to return."*

I understood Trobt's perplexity as I finished. He could not accept what I told him because to him winning was only a matter of a military victory, a victory of strength; Velda had never experienced defeat as a weakness from within. My words made him uneasy, but he did not understand. He shrugged. "Do we have any other weakness?" he asked.

*"Your women."*

"Explain."

*"They are 'set' for the period when they greatly outnumbered their men. Your compatible ratio is eight women to one man. Yet now it is one to one. Further, you produce too few children. Your manpower must ever be in small supply. Worse, your shortage of women sponsors a covert despair and sadism in your young men . . . a hunger and starvation to follow instinct, to win women by courage and conquest and battle against danger . . . that only a war can restrain."*

"The solution?"

*"Beat the Federation. Be in a position to have free access to their women."*

Came the final ignominy. "Do you have a means of reporting back to the Ten Thousand Worlds?"

*"Yes. Buried somewhere inside me is a nerve-twitch tape. Flesh pockets of chemicals are stored there also. When my body temperature drops fifteen degrees below normal the chemicals will be activated and will use the tissues of my body for fuel and generate sufficient energy to transmit the information on the tape back to the Ten Thousand Worlds."*

That was enough.

"Do you still intend to kill me?" I asked Trobt the next day as we walked in his garden.

"Do not fear," he answered. "You will not be cheated of an honorable death. All Velda is as eager for it as you."

"Why?" I asked. "Do they see me as a madman?"

"They see you as you are. They cannot conceive of one man challenging a planet, except to win himself a bright and gory death on a page of history, the first man to deliberately strike and die in the coming war—not an impersonal clash of battleships, but a *man* declaring personal battle against men. We would not deprive you of that death. Our admiration is too great. We want the symbolism of your blood now just as greatly as you want it yourself. Every citizen is waiting to watch you die—gloriously."

I realized now that all the while he had interpreted my presence here in this fantastic way. And I suspected that I had no arguments to convince him differently.

Trobt had hinted that I would die under torture. I thought of the old histories of Earth that I had read. Of the warrior race of North American Indians. A captured enemy must die. But if he had been an honorable enemy he was given an honorable death. He was allowed to die under the stress most familiar to them. Their strongest ethic was a cover-up for the defeated, the universal expressionless suppressal of reaction in conquering or watching conquest, so as not to shame the defeated. Public torture—with the women, as well as warriors, watching—the chance to exhibit fortitude, all the way to the breaking point, and beyond. That was considered the honorable death, while it was a shameful trick to quietly slit a man's throat in his sleep without giving him a chance to fight—to show his scorn of flinching under the torture.

Here I was the Honorable Enemy who had exhibited courage. They would honor me, and satisfy their hunger for an Enemy, by giving me the breaking point test.

But I had no intention of dying!

"You will not kill me," I addressed Trobt. "And there will be no war."

He looked at me as though I had spoken gibberish.

My next words, I knew, would shock him. "I'm going to recommend unconditional surrender," I said.

Trobt's head which he had turned away swiveled sharply back to me. His mouth opened and he made several motions to speak before succeeding. "Are you serious?"

"Very," I answered.

Trobt's face grew gaunt and the skin pressed tight against his cheekbones—almost as though he were making the surrender rather than I. "Is this decision dictated by your logic," he asked dryly, "or by faintness of heart?"

I did not honor the question enough to answer.

Neither did he apologize. "You understand that unconditional surrender is the only kind we will accept?"

I nodded wearily.

"Will they agree to your recommendation?"

"No," I answered. "Humans are not cowards, and they will fight—as long as there is any slightest hope of success. I will not be able to convince them that their defeat is inevitable. But I can prepare them for what is to come. I hope to shorten the conflict immeasurably."

"I can do nothing but accept," Trobt said after a moment of thought. "I will arrange transportation back to Earth for you tomorrow." He paused and regarded me with expressionless eyes. "You realize that an enemy who surrenders without a struggle is beneath contempt?"

The blood crept slowly into my cheeks. It was difficult to ignore his taunt. "Will you give me six months before you move against us?" I asked. "The Federation is large. I will need time to bring my message to all."

"You have your six months." Trobt was still not through with me, personally. "On the exact day that period ends I will expect your return to Velda. We will see if you have any honor left."

"I will be back," I said.

During the next six months I spread my word throughout the Ten Thousand Worlds. I met disbelief everywhere. I had not expected otherwise. The last day I returned to Velda.

Two days later Velda's Council acted. They were going to give the Humans no more time to organize counteraction. I went in the same spaceship that carried Trobt. I intended to give him any advice he needed about the Worlds. I asked only that his first stop be at the Jason's Fleece fringe.

Beside us sailed a mighty armada of warships, spaced in a long line that would encompass the entire portion of the galaxy occupied by the Ten Thousand Worlds. For an hour we moved ponderously forward, then the stars about us winked out for an instant. The next moment a group of Worlds became visible on the ship's vision screen. I recognized them as Jason's Fleece.

One World expanded until it appeared the size of a baseball. "Quagman," Trobt said.

Quagman, the trouble spot of the Ten Thousand Worlds. Dominated by an unscrupulous clique that ruled by vendetta, it had been the source of much trouble and vexation to the other Worlds. Its leaders were considered little better than brigands. They had received me with much apparent courtesy. In the end they had even agreed to surrender to the Veldians—when and if they appeared. I had accepted their easy concurrence with askance, but they were my main hope.

Two Veldians left our ship in a scooter. We waited ten long, tense hours. When word finally came back it was from the Quaqmans themselves. The Veldian envoys were being held captive. They would be released upon the delivery of two billion dollars—in the currency of any recognized World—and the promise of immunity.

The fools!

Trobt's face remained impassive as he received the message.

We waited several more hours. Both Trobt and I watched the green mottled baseball on the vision screen. It was Trobt who first pointed out a small, barely discernible, black spot on the upper lefthand corner of Quagman.

As the hours passed, and the black spot swung slowly to the right as the planet revolved, it grew almost imperceptibly larger. When it disappeared over the edge of the world we slept.

In the morning the spot appeared again, and now it covered half the face of the planet. Another ten hours and the entire planet became a blackened cinder.

Quagman was dead.

The ship moved next to Mican.

Mican was a sparsely populated prison planet. Criminals were usually sent to newly discoverd Worlds on the edge of the Human expansion circle, and allowed to make their own adjustments toward achieving a stable government. Men with the restless natures that made them criminals on their own highly civilized Worlds, made the best pioneers. However, it always took them several generations to work their way up from anarchy to a co-operative government. Mican had not yet had that time. I had done my best in the week I spent with them to convince them to organize, and to be prepared to accept any terms the Veldians might offer. The gesture, I feared, was useless but I had given all the arguments I knew.

A second scooter left with two Veldian representatives. When it returned Trobt left the control room to speak with them.

He returned, and shook his head. I knew it was useless to argue.

Mican died.

At my request Trobt agreed to give the remaining Jason's Fleece Worlds a week to consider—on the condition that they made no offensive forays. I wanted them to have time to fully assess what had happened to the other two Worlds—to realize that that same stubbornness would result in the same disaster for them.

At the end of the third twenty-four hour period the Jason's Fleece Worlds surrendered—unconditionally. They had tasted blood; and recognized futility when faced with it. That had been the best I had been able to hope for, earlier.

Each sector held off surrendering until the one immediately ahead had given in. But the capitulation was complete at the finish. No more blood had had to be shed.

The Veldians' terms left the Worlds definitely subservient, but they were neither unnecessarily harsh, nor humiliating. Velda demanded specific limitations on Weapons and war-making potentials; the obligation of reporting all technological and scientific progress; and colonial expansion only by prior consent.

There was little actual occupation of the Federation Worlds, but the Veldians retained the right to inspect any and all functions of the various governments. Other aspects of social and economic methods would be subject only to occasional checks and investigation. Projects considered questionable would be supervised by the Veldians at their own discretion.

The one provision that caused any vigorous protest from the Worlds was the Veldian demand for Human women. But even this was a purely emotional reaction, and died as soon as it was more fully understood. The Veldians were not barbarians. They used no coercion to obtain our women. They only demanded the same right to woo them as the citizens of the Worlds had. No woman would be taken without her free choice. There would be no valid protest to that.

In practice it worked quite well. On nearly all the Worlds there were more women than men, so that few men had to go without mates because of the Veldians' inroads. And —by human standards—they seldom took our most desirable women. Because the acquiring of weight was corollary with the Veldian women becoming sexually attractive, their men had an almost universal perference for fleshy women. As a result many of our women who would have had difficulty securing human husbands found themselves much in demand as mates of the Veldians.

Seven years passed after the Worlds' surrender before I saw Kalin Trobt again.

The pact between the Veldians and the Worlds had worked out well, for both sides. The demands of the Veldians involved little sacrifice by the Federation, and the necessity of reporting to a superior authority made for less wrangling and jockeying for advantageous position among the Worlds themselves.

The fact that the Veldians had taken more than twenty million of our women—it was the custom for each Veldian male to take a Human woman for one mate—caused little dislocation or discontent. The number each lost did less than balance the ratio of the sexes.

For the Veldians the pact solved the warrior-set frustrations, and the unrest and sexual starvation of their males. Those men who demanded action and adventure were given supervisory posts on the Worlds as an outlet for their drives. All could now obtain mates; mates whose biological make-up did not necessitate an eight to one ratio.

Each year it was easier for the Humans to understand the Veldians and to meet them on common grounds socially. Their natures became less rigid, and they laughed more—even at themselves, when the occasion demanded.

This was especially noticeable among the younger Veldians, just reaching an adult status. In later years when the majority of them would have a mixture of human blood, the difference between us would become even less pronounced.

Trobt had changed little during those seven years. His hair had grayed some at the temples, and his movements were a bit less supple, but he looked well. Much of the intensity had left his acquiline features, and he seemed content.

We shook hands with very real pleasure. I led him to chairs under the shade of a tree in my front yard and brought drinks.

"First, I want to apologize for having thought you a coward," he began, after the first conventional pleasantries. "I know now I was very wrong. I did not realize for years, however, just what had happened." He gave his wry smile. "You know what I mean, I presume?"

I looked at him inquiringly.

"There was more to your decision to capitulate than was revealed. When you played the Game your fort was finding the weakness of an opponent. And winning the second game. You made no attempt to win the first. I see now, that as on the boards, your surrender represented only the conclusion of the first game. You were keeping our weakness to yourself, convinced that there would be a second game. And that your Ten Thousand Worlds would win it. As you have."

"What would you say your weakness was?" By now I suspected he knew everything, but I wanted to be certain.

"Our desire and need for Human women, of course."

There was no need to dissemble further. "The solution first came to me," I explained, "when I remembered a formerly independent Earth country named China. They lost most of their wars, but in the end they always won."

"Through their women?"

"Indirectly. Actually it was done by absorbing their conquerors. The situation was similar between Velda and the Ten Thousand Worlds. Velda won the war, but in a thousand years there will be no Veldians—racially."

"That was my first realization," Trobt said. "I saw immediately then how you had us hopelessly trapped. The marriage of our men to your women will blend our bloods until—with your vastly greater numbers—in a dozen generations there will be only traces of our race left.

"And what can we do about it?" Trobt continued. "We can't kill our beloved wives—and our children. We can't stop further acquisition of human women without disrupting our society. Each generation the tie between us will become closer, our blood thinner, yours more dominant, as the intermingling continues. We cannot even declare war against the people who are doing this to us. How do you fight an enemy that has surrendered unconditionally?"

"You do understand that for your side this was the only solution to the imminent chaos that faced you?" I asked.

"Yes." I watched Trobt's swift mind go through its reasoning. I was certain he saw that Velda was losing only an arbitrary distinction of race, very much like the absorbing of the early clans of Velda into the family of the Danlee. Their dislike of that was very definitely only an emotional consideration. The blending of our bloods would benefit both; the resultant new race would be better and stronger because of that blending.

With a small smile Trobt raised his glass. "We will drink to the union of two great races," he said. "And to you—the winner of the Second Game!"

THE END

# TRY AND CHANGE THE PAST

### BY

### FRITZ LEIBER

***There is an infinite number of paths through a lens between an object point and its image point—and no matter how many changes of path you make, have you changed anything?***

Illustrated by van Dongen

NO, I wouldn't advise anyone to try to change the past, at least not his *personal* past, although changing the *general* past is my business, my fighting business. You see, I'm a Snake in the Change War. Don't back off—human beings, even Resurrected ones engaged in time-fighting, aren't built for outward wriggling and their poison is mostly psychological. "Snake" is slang for the soldiers on our side, like Hun or Reb or Ghibbelin. In the Change War we're trying to alter the past—and it's tricky, brutal work, believe me—at points all over the cosmos, anywhere and anywhen, so that history will be warped to make our side defeat the Spiders. But that's a much bigger story, the biggest in fact, and I'll leave it occupying several planets of microfilm and two asteroids of coded molecules in the files of the High Command.

Change one event in the past and you get a brand new future? Erase the conquests of Alexander by nudging a Neolithic pebble? Extirpate America by pulling up a shoot of Sumerian grain? Brother, that isn't the way it works at all! The space-time continuum's built of stubborn stuff and change is anything but a chain-reaction. Change the past and you start a wave of changes moving futurewards, but it damps out mighty fast. Haven't you ever heard of temporal reluctance, or of the Law of the Conservation of Reality?

Here's a little story that will illustrate my point: This guy was fresh recruited, the Resurrection sweat still wet in his armpits, when he got the idea he'd use the time-traveling power to go back and make a couple of little changes in his past so that his life would take a happier course and maybe, he thought, he wouldn't have to die and get mixed up with Snakes and Spiders at all. It was as if a new-enlisted feuding hillbilly soldier should light out with the high-power rifle they issued him to go back to his mountains and pick off his pet enemies.

Normally it couldn't ever have happened. Normally, to avoid just this sort of thing, he'd have been shipped straight off to some place a few thousand or million years distant from his point of enlistment and maybe a few light-years, too. But there was a local crisis in the Change War and a lot of routine operations got held up and one new recruit was simply forgotten.

Normally, too, he'd never have been left alone a moment in the Dispatching Room, never even have glimpsed the place except to be rushed through it on arrival and reshipment. But, as I say, there happened to be a crisis, the Snakes were shorthanded, and several soldiers were careless. Afterwards two N. C.'s were busted because of what happened and a First Looey not only lost his commission but was transferred outside the galaxy and the era. But during the crisis this recruit I'm telling you about had opportunity and more to fool around with forbidden things and try out his schemes.

He also had all the details on the last part of his life back in the real world, on his death and its consequences, to mull over and be tempted to change. This wasn't anybody's carelessness. The Snakes give every candidate that information as part of the recruiting pitch. They spot a death coming and the Resurrection Men go back and recruit the person from a point a few minutes or at most a few hours earlier. They explain in uncomfortable detail what's going to happen and wouldn't he rather take the oath and put on scales? I never heard of anybody turning down that offer. Then they lift him from his lifeline in the form of a Doubleganger and from then on, brother, he's a Snake.

So this guy had a clearer picture of his death than of the day he bought his first car, and a masterpiece of morbid irony it was. He was living in a classy penthouse that had belonged to a crazy uncle of his—it even had a midget astronomical observatory, unused for years—but he was stony broke, up to the top hair in debt, and due to be dispossessed next day. He'd never had a real job, always lived off his rich relatives and his wife's, but now he was getting a little too mature for his stern dedication to a life of sponging to be cute. His charming personality, which had been his only asset, was deader from overuse and abuse than he himself would be in a few hours. His crazy uncle would not have anything to do with him any more. His wife was responsible for a lot of the wear and tear on his social-butterfly wings; she had hated him for years, had screamed at him morning to night the way you can only get away with in a penthouse, and was going batty herself. He'd been playing around with another woman, who'd just given him the gate, though he knew his wife would never believe that and would only add a scornful note to her screaming if she did.

It was a lousy evening, smack in the middle of an August heat wave. The Giants were playing a night game with Brooklyn. Two long-run musicals had closed. Wheat had hit a new high. There was a brush fire in California and a war scare in Iran. And tonight a meteor shower was due, according to an astronomical bulletin that had arrived in the morning mail addressed to his uncle—he generally dumped such stuff in the fireplace unopened, but today he had looked at it because he had nothing else to do, either more useful or more interesting.

The phone rang. It was a lawyer. His crazy uncle was dead and in the will there wasn't a word about an Asteroid Search Foundation. Every penny of the fortune went to the no-good nephew.

This same character finally hung up the phone, fighting off a tendency for his heart to spring giddily out of his chest and through the ceiling.

Just then his wife came screeching out of the bedroom. She'd received a cute, commiserating, tell-all note from the other woman; she had a gun and announced that she was going to finish him off.

The sweltering atmosphere provided a good background for sardonic catastrophe. The French doors to the roof were open behind him but the air that drifted through was muggy as death. Unnoticed, a couple of meteors streaked faintly across the night sky.

Figuring it would sure dissuade her, he told her about the inheritance. She screamed that he'd just use the money to buy more other women—not an unreasonable prediction—and pulled the trigger.

The danger was minimal. She was at the other end of a big living room, her hand wasn't just shaking, she was waving the nickle-plated revolver as if it were a fan.

The bullet took him right between the eyes. He flopped down, deader than his hopes were before he got the phone call. He saw it happen because as a clincher the Resurrection Men brought him forward as a Doubleganger to witness it invisibly—also standard Snake procedure and not productive of time-complications, incidentally, since Doublegangers don't imprint on reality unless they want to.

They stuck around a bit. His wife looked at the body for a couple of seconds, went to her bedroom, blonded her graying hair by dousing it with two bottles of undiluted peroxide, put on a tarnished gold-lamé evening gown and a bucket of make-up, went back to the living room, sat down at the piano, played "Country Gardens" and then shot herself, too.

So that was the little skit, the little double blackout, he had to mull over outside the empty and unguarded Dispatching Room, quite forgotten by its twice-depleted skeleton crew while every available Snake in the sector was helping deal with the local crisis, which centered around the planet Alpha Centauri Four, two million years minus.

Naturally it didn't take him long to figure out that if he went back and gimmicked things so that the first blackout didn't occur, but the second still did, he would be sitting pretty back in the real world and able to devote his inheritance to fulfilling his wife's prediction and other pastimes. He didn't know much about Doublegangers yet and had it figured out that if he didn't die in the real world he'd have no trouble resuming his existence there—maybe it'd even happen automatically.

So this Snake—name kind of fits him, doesn't it?—crossed his fingers and slipped into the Dispatching Room. Dispatching is so simple a child could learn it in five minutes from studying the board. He went back to a point a couple of hours before the tragedy, carefully avoiding the spot where the Resurrection Men had lifted him from his lifeline. He found the revolver in a dresser drawer, unloaded it, checked to make sure there weren't any more cartridges around, and then went ahead a couple of hours, arriving just in time to see himself get the slug between the eyes same as before.

As soon as he got over his disappointment, he realized he'd learned something about Doublegangers he should have known all along, if his mind had been clicking. The bullets he'd lifted were Doublegangers, too; they had disappeared from the real world only at the point in space-time where he'd lifted them, and they had continued to exist, as real as ever, in the earlier and later sections of their lifelines—with the result that the gun was loaded again by the time his wife had grabbed it up.

So this time he set the board so he'd arrive just a few minutes before the tragedy. He lifted the gun, bullets and all, and waited around to make sure it stayed lifted. He figured—rightly—that if he left this space-time sector the gun would reappear in the dresser drawer, and he didn't want his wife getting hold of any gun, even one with a broken lifeline. Afterwards—after his own death was averted, that is—he figured he'd put the gun back in his wife's hand.

Two things reassured him a lot, although he'd been expecting the one and hoping for the other: his wife didn't notice his presence as a Doubleganger and when she went to grab the gun she acted as if it weren't gone and held her right hand just as if there were a gun in it. If he'd studied philosophy, he'd have realized he was witnessing a proof of Leibniz's theory of Pre-established harmony: that neither atoms nor human beings really affect each other, they just look as if they did.

But anyway he had no time for theories. Still holding the gun, he drifted out into the living room to get a box seat right next to Himself for the big act. Himself didn't notice him any more than his wife had.

His wife came out and spoke her piece same as ever, Himself cringed as if she still had the gun and started to babble about the inheritance, his wife sneered and made as if she were shooting Himself.

Sure enough, there was no shot this time, *and* no mysteriously appearing bullet hole—which was something he'd been afraid of. Himself just stood there dully while his wife made as if she were looking down at a dead body and went back to her bedroom.

He was pretty pleased: this time he actually *had* changed the past. Then Himself slowly glanced around at him, still with that dull look, and slowly came toward him. He was more pleased than ever because he figured now they'd melt together into one man and one lifeline again, and he'd be able to hurry out somewhere and establish an alibi, just to be on the safe side, while his wife suicided.

But it didn't happen quite that way. Himself's look changed from dull to desperate, he came up close . . . and suddenly grabbed the gun and quick as a wink put a thumb to the trigger and shot himself between the eyes. And flopped, same as ever.

Right there he was starting to learn a little—and it was an unpleasant shivery sort of learning—about the Law of the Conservation of Reality. The four-dimensional space-time universe doesn't *like* to be changed, any more than it likes to lose or gain energy or matter. If it *has* to be changed, it'll adjust itself just enough to accept that change and no more. The Conservation of Reality is a sort of Law of Least Action, too. It doesn't matter how improbable the events involved in the adjustment are, just so long as they're possible at all and can be used to patch the established pattern. His death, at this point, was part of the established pattern. If he lived on instead of dying, billions of other compensatory changes would have to be made, covering many years, perhaps centuries, before the old pattern could be re-established, the snarled lifelines woven back into it —and the universe finally go on the same as if his wife had shot him on schedule.

*This* way the pattern was hardly effected at all. There were powder burns on his forehead that weren't there before, but there weren't any witnesses to the shooting in the first place, so the presence or absence of powder burns didn't matter. The gun was lying on the floor instead of being in his wife's hands, but he had the feeling that when the time came for her to die, she'd wake enough from the Pre-established Harmony trance to find it, just as Himself did.

So he'd learned a little about the Conservation of Reality. He also had learned a little about his own character, especially from Himself's last look and act. He'd got a hint that he had been trying to destroy himself for years by the way he'd lived, so that inherited fortune or accidental success couldn't save him, and if his wife hadn't shot him he'd have done it himself in any case. He'd got a hint that Himself hadn't merely been acting as an agent for a self-correcting universe when he grabbed the gun, he'd been acting on his own account, too—the universe, you know, operates by getting people to co-operate.

But, although these ideas occurred to him, he didn't dwell on them, for he figured he'd had a partial success the second time, and the third time if he kept the gun away from Himself, if he dominated Himself, as it were, the melting-together would take place and everything else go forward as planned.

He had the dim realization that the universe, like a huge sleepy animal, knew what he was trying to do and was trying to thwart him. This feeling of opposition made him determined to outmaneuver the universe—not the first guy to yield to such a temptation, of course.

And up to a point his tactics worked. The third time he gimmicked the past, everything started to happen just as it did the second time. Himself dragged miserably over to him, looking for the gun, but he had it tucked away and was prepared to hold onto it. Encouragingly, Himself didn't grapple, the look of desperation changed to one of utter hopelessness, and Himself turned away from him and very slowly walked to the French doors and stood looking out into the sweating night. He figured Himself was just getting used to the idea of not dying. There wasn't a breath of air. A couple of meteors streaked across the sky. Then, mixed with the upseeping night sounds of the city, there was a low whirring whistle.

Himself shook a bit, as if he'd had a sudden chill. Then Himself turned around and slumped to the floor in one movement. Between his eyes was a black hole.

Then and there this Snake I'm telling you about decided never again to try and change the past, at least not his personal past. He'd had it, and he'd also acquired a healthy respect for a High Command able to change the past, albeit with difficulty. He scooted back to the Dispatching Room, where a sleepy and surprised Snake gave him a terrific chewing-out and confined him to quarters. The chewing-out didn't bother him too much—he'd acquired a certain fatalism about things. A person's got to learn to accept reality as it is, you know—just as you'd best not be surprised at the way I disappear in a moment or two—I'm a Snake too, remember.

If a statistician is looking for an example of a highly improbable event, he can hardly pick a more vivid one than the chance of a man being hit by a meteorite. And, if he adds the condition that the meteorite hit him between the eyes so as to counterfeit the wound made by a 32-caliber bullet, the improbability becomes astronomical cubed. So how's a person going to outmaneuver a universe that finds it easier to drill a man through the head that way rather than postpone the date of his death?

THE END

# THE ANALYTICAL LABORATORY

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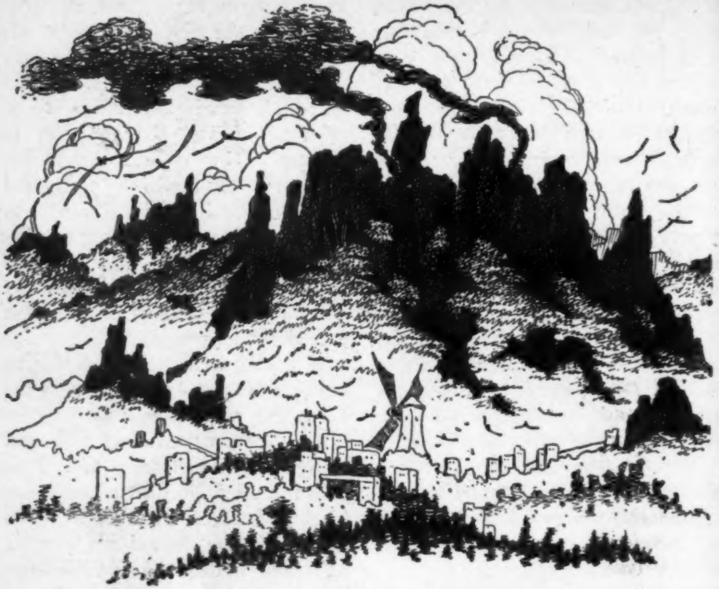
THE EDITOR.



# THE MAN WHO COUNTS

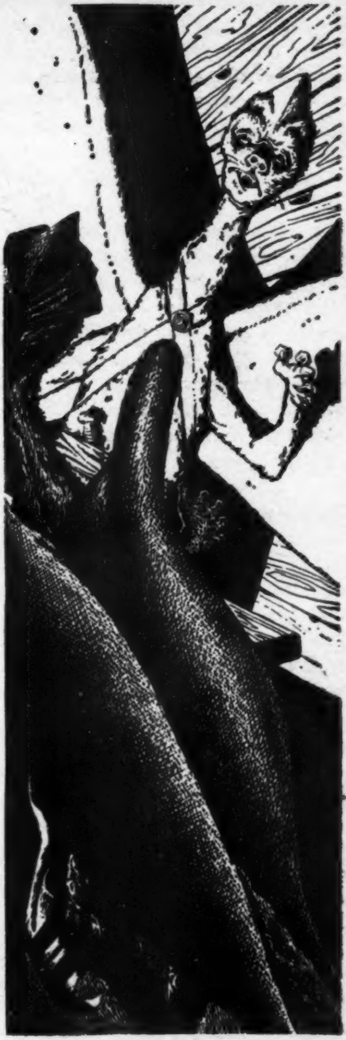
***Second of Three Parts.** It was a pleasant enough world, with quite likable natives...but there was nothing whatever a human dared eat, and their slender supplies were running out....*

### BY POUL ANDERSON

## SYNOPSIS

*The planet called Diomedes is a freak: twice the size of Earth and half the density; circling its sun, a reddish dwarf star, in about one year and rotating in twelve and a half hours, but with the axis nearly in the orbital plane. Thus the long, dark, bitter winters of the higher latitudes force all the more advanced animal life to migrate annually to the tropics. The dense atmosphere, retained by the high gravitational potential, puts immense thrust behind even a moderate wind, but at the same time it will support a flying creature the size of a man. Accordingly the intelligent natives, though mammalian, look rather like dragons. The complete absence of heavy elements, including the readily discoverable metals, has kept their most advanced nations in a neolithic state. Earthmen maintain a small trading post on one continent where they exchange metal for local gems and other goods—but not for food, since Terrestrial and Diomedean biochemistries are mutually poisonous.*

*Eric Wace, factor of the Solar Spice & Liquors Company, is told to guide the head of the firm, Nicholas van Rijn, to a scenic spot in the antipodes. Van Rijn has stopped off on his way home to Earth from Antares to show the guest on his space yacht, Lady Sandra Tamarin, what a recently-discovered planet looks like. She is heiress apparent to the throne of the Grand Duchy of Hermes, an*



Illustrated by van Dongen

*autonomous colonial world. Van Rijn is angling for trade concessions there; she is openly looking for a man whose blood can renew her own declining, inbred ruling family.*

*Their aerial skycruiser has flown across a great, empty ocean and is skirting an unexplored archipelago when a saboteur's bomb wrecks it. Only these three people survive the crash, and their crippled vessel is sinking, its communicator ruined. They try to make a raft, though Diomedes is so large and little mapped that there is small chance a search party from the base can find them without guidance.*

*Actually they have ditched in the Sea of Achan, a region currently being disputed by the Fleet of Drak'ho and the Great Flock of Lannach. The hereditary Grand Admiral of the Fleet, Syranax hyr Urnan, learning from scouts of the unknown ship, sends his Chief Executive Officer, Delp hyr Orikan, to pick up its alien crew. Delp also rescues the several months' worth of Terrestrial food which was aboard the skycruiser, but relieves the humans of all their other possessions. He interrogates them through a prisoner, Tolk, the chief Herald — professional linguist — of Lannach's Flock. Tolk and Wace discover a language they know mutually in different patois, though no Diomedean hereabouts has ever heard of Earth.*

*In the course of days, the humans learn something of the Drak'ho speech and of the situation. This is an anomalous culture of hard-working fishers and seaweed harvesters, spending their lives on great rafts and dugout canoes, ruled by a rigid aristocracy and, for some unknown reason, not bound to the special breeding period which the ordinary migratory Diomedean is governed by: humanlike, they reproduce the year around. They are scientifically minded, with a well-developed technology of wood, stone, and ceramics; their special weapons, flamethrowers and firebombs, have given them the edge over the Flock whose country they are invading.*

*Since they have already driven their enemies into the uplands of Lannach, the Drak'honai have no special motive to help the Earthlings; in fact, it would be dubious politics to encounter the powerful, enigmatic Terrestrial society before consolidating this conquest. Nor can anyone think how even a message might cross the islandless Ocean before the castaways' food runs out—though Delp argues that the attempt should be made.*

*Van Rijn has secretly learned some words of Lannachamael from Tolk, as well as Drak'ho, and conspired with the Herald. At a conference he stirs up the smoldering feud between Delp and Syranax's ambitious, unpopular son, T'heonax. A riot breaks loose between their respective partisans, and in the confusion Van Rijn manages to free Tolk. Delp's sailors are soon quelled by the full-time warriors.*

*Tolk carries news of the humans to the Flock's hard-pressed young* *commander, Trolwen, who decides to rescue them on the chance they can help him. By using a large force, he steals them and most of their supplies from a raft, beats off the Drak'ho counterattack, and carries them back to his hideaway on Lannach.*

## PART 2

### IX

THE northern coast of Lannach sloped in broad valleys to the Sea of Achan; and here, in game-filled forests and on grassy downs, had arisen those thorps in which the Flock's clans customarily dwelt. Where Sagna Bay made its deep cut into the land, many such hamlets had grown together into larger units. Thus the towns came to be, Ulwen and flinty Mannenach and Yo of the Carpenters.

But their doors were broken down and their roofs burned open; Drak'ho canoes lay on Sagna's beaches, Drak'ho war-bands laired in empty Ulwen and patrolled the Anch Forest and rounded up the hornbeast herds emerging from winter sleep on Duna Brae.

Its boats sunk, its houses taken, and its hunting and fishing grounds cut off, the Flock retired into the uplands. On the quaking lava slopes of Mount Oborch or in the cold canyons of the Misty Mountains, there were a few small settlements where the poorer clans had lived. The females, the very old and the very young could be crowded into these; tents could be pitched and caves occupied. By scouring this gaunt country from Hark Heath to the Ness, and by going often hungry, the whole Flock could stay alive for a while longer.

But the heart of Lannach was the north coast, which the Drak'honai now forbade. Without it, the Flock was nothing, a starveling tribe of savages . . . until autumn, when Birthtime would leave them altogether helpless.

"It is not well," said Trolwen inadequately.

He strode up a narrow trail, toward the village—what was its name now? Salmenbrok—which perched on the jagged crest above. Beyond that, dark volcanic rock still streaked with snowfields climbed dizzily upward to a crater hidden in its own vapors. The ground shivered underfoot, just a bit, and van Rijn heard a rumble in the guts of the planet.

Poor isostatic balance . . . to be expected under these low-density conditions . . . a geologic history of overly-rapid change, earthquake, eruption, flood, and new lands coughed up from the sea bottom in a mere thousand decades . . . hence, in spite of all the water, a catastrophically uneven climate— He wrapped the stinking fur blanket they had given him more closely around his rough-coated frame, blew on numbed hands, peered into the damp sky for a glimpse of sun, and swore.

This was no place for a man his age and girth. He should be at home, in his own deeply indented armchair, with a good cigar, a tall drink and the gardens of Jakarta flaming around him. For a moment, the remembrance of Earth was so sharp that he snuffled in self-pity. It was bitter to leave his bones in this nightmare land, when he had thought to pull Earth's soft green turf about his weary body. . . . Hard and cruel, yes, and every day the company must be getting deeper into the red ink without him there to oversee! That hauled him back to practicalities.

"Let me get this all clear in my head," he requested. He found himself rather more at home in Lannachamael than he had been—even without faking—in the Drak'ho speech. Here, by chance, the grammar and the guttural noises were not too far from his mother tongue. Already he approached fluency.

"You came back from your migration and found the enemy was here waiting for you?" he continued.

Trolwen jerked his head in a harsh and painful gesture. "Yes. Hitherto we had only known vaguely of their existence; their home regions are well to the southeast of ours. We knew they had been forced to leave because suddenly the trech—the fish which are the mainstay of their diet—had altered their own habits, shifting from Draka waters to Achan. But we had no idea the Fleet was bound for our country."

Van Rijn's long hair swished, lank and greasy-black, the careful curls all gone out of it, as he nodded. "It is like home history. In the Middle Ages on Earth, when the herring changed their ways for some begobbled herring reason, it would change the history of maritime countries. Kings would fall, by damn, and wars would be fought over the new fishing grounds."

"It has never been of great importance to us," said Trolwen. "A few clans in the Sagna region have . . . had small dugouts, and got much of their food with hook and line. None of this beast-labor the Drakska go through, dragging those nets, even if they do pull in more fish! But for our folk generally, it was a minor thing. To be sure, we were pleased, several years ago, when the trech appeared in great numbers in the Sea of Achan. It is large and tasty, its oil and bones have many uses. But it was not such an occasion for rejoicing as if . . . oh, as if the wild hornbeasts had doubled their herds overnight."

His fingers closed convulsively on the handle of his tomahawk. He was, after all, quite young. "Now I see the gods sent the trech to us in anger and mockery. For the Fleet followed the trech."

Van Rijn paused on the trail, wheezing till he drowned out the distant lava rumbles. "Whoof! Hold it there, you! Not so like a God-forgotten horse race, if you please—Ah. If the fish are not so great for you, why not let the Fleet have the Achan waters?"

It was, he knew, not a true question: only a stimulus. Trolwen delivered himself of several explosive obscenities before answering, "They attacked us the moment we came home this spring. They had already occupied our coastlands! And even had they not done so, would you let a powerful horde of . . . strangers . . . whose very habits are alien and evil . . . would you let them dwell at your windowsill? How long could such an arrangement last?"

Van Rijn nodded again. Just suppose a nation with tyrant government and filthy personal lives were to ask for the Moon, on the grounds that they needed it and it was not of large value to Earth—

Personally, he could afford to be tolerant. In many ways, the Drak'honai were closer to the human norm than the Lannachska. Their master-serf culture was a natural consequence of economics: given only neolithic tools, a raft big enough to support several families represented an enormous capital investment. It was simply not possible for disgruntled individuals to strike out on their own; they were at the mercy of the State. In such cases, power always concentrates in the hands of aristocratic warriors and intellectual priesthoods; among the Drak'honai, those two classes had merged into one.

The Lannachska, on the other hand—more typically Diomedean—were primarily hunters. They had very few highly specialized craftsmen; the individual could survive using tools made by himself. The low calorie/area factor of a hunting economy made them spread out thin over a large region, each small group nearly independent of the rest. They exerted themselves in spasms, during the chase for instance; but they did not have to toil day after day until they nearly dropped, as the common netman or oarsman or deckhand must in the Fleet—hence there was no economic justification on Lannach for a class of bosses and overseers.

Thus, their natural political unit was the little matrilineal clan. Such semiformal blood groups, almost free of government, were rather loosely organized into the Great Flock. And the Flock's *raison d'être* —apart from minor inter-sept business at home—was simply to increase the safety of all when every Diomedean on Lannach flew south for the winter.

Or came home to war!

"It is interesting," murmured Van Rijn, half in Anglic. "Among our peoples, like on most planets, only the agriculture folk got civilized. Here they make no farms at all: the big half-wild hornbeast herds is closest thing, *nie?* You hunt, berry-pick, reap wild grain, fish a little—yet some of you know writing and make books; I see you have machines and houses, and weave cloth. Could be, the every-year stimulus of meeting foreigners in the tropics gives you ideas?"

"What?" asked Trolwen vaguely.

"Nothings. I just wondered, me, why—since life here is easy enough so you have time for making civilization—you do not grow so many you eat up all your game and chop down all your woods. That is what we called a successful civilization back on Earth."

"Our numbers do not increase fast," said Trolwen. "About three hundred years ago, a daughter Flock was formed and moved elsewhere, but the increase is very slow. We lose so many on the migrations, you see—storm, exhaustion, sickness, barbarian attack, wild animals, sometimes cold or famine—" He hunched his wings, the Diomedean equivalent of a shrug.

"Ah-ha! Natural selection. Which is all well and good, if nature is obliging to pick you for survival. Otherwise gives awful noises about tragedy." Van Rijn stroked his goatee. The chins beneath it were getting bristly as his last application of anti-beard enzyme wore off. "So. It does give one notion of what made your race get brains. Hibernate or migrate! And if you migrate, then be smart enough to meet all kinds trouble, by damn."

He resumed his noisy walk up the trail. "But we got our troubles of now to think about, especially since they are too the troubles belonging with Nicholas van Rijn. Which is not to be stood. Hmpf! Well, now, tell me more. I gather the Fleet scrubbed its decks with you and kicked you up here where the only flat country is the map. You want home to the lowlands again. You also want to get rid of the Fleet."

"We gave them a good fight," said Trolwen stiffly. "We still can—and will, by my grandmother's ghost! There were reasons why we were defeated so badly. We came tired and hungry back from ten-days of flight; one is always weak at the end of the springtime journey home. Our strongholds had already been occupied. The Draka flamethrowers set afire such other defenses as we contrived, and made it impossible for us to fight them on the water, where their real strength lies."

His teeth snapped together in a carnivore reflex. "And we have to overcome them soon! If we don't, we are finished. And they know it!"

"I am not clear over this yet," admitted Van Rijn. "The hurry is that all your young are born the same time, *nie?*"

"Yes." Trolwen topped the rise and waited beneath the walls of Salmenbrok for his puffing guest.

Like all Lannachska settlements, it was fortified against enemies, animal or intelligent. There was no stockade—that would be pointless here where all the higher life-forms had wings. An average building was roughly in the shape of an ancient Terrestrial blockhouse. The ground floor was doorless and had mere slits for windows; entrance was through an upper story or a trap in the thatched roof. A hamlet was fortified not by outer walls but by being woven together with covered bridges and underground passages.

Up here, above timberline, the houses were of undressed stone mortared in place, rather than the logs more common among the valley clans. But this thorp was solidly made, furnished with a degree of comfort that indicated how bountiful the lowlands must be.

Van Rijn took time to admire such features as wooden locks constructed like Chinese puzzles, a wooden lathe set with a cutting edge of painstakingly fractured diamond, and a wooden saw whose teeth were of renewable volcanic glass. A communal windmill ground nuts and wild grain, as well as powering numerous smaller machines; it included a pump which filled a great stone basin in the overhanging cliff with water, and the water could be let down again to keep the mill turning when there was no wind. He even saw a tiny sail-propelled railroad, with wooden-wheeled basketwork carts running on iron-hard wooden rails. It carried flint and obsidian from the local quarries, timber from the forests, dried fish from the coast, furs and herbs from the lowlands, handicrafts from all the island. Van Rijn was delighted.

"So!" he said. "Commerce! You are fundamentally capitalists. Ha, by damn, I think soon we do some business!"

Trolwen shrugged. "There is nearly always a strong wind up here. Why should we not let it take our burdens? Actually, all the apparatus you see took many lifetimes to complete—we're not like those Drakska, wearing themselves out with labor."

Salmenbrok's temporary population crowded about the human, with mumbling and twittering and wing-flapping, the cubs twisting around his legs and their mothers shrieking at them to come back. "Ten thousand purple devils!" he choked. "They think maybe I am a politician to kiss their brats, ha?"

"Come this way," said Trolwen. "Toward the Males' Temple—females and young may not follow, they have their own." He led the way along another path, making an elaborate salute to a small idol in a niche on the trail. From its crudity, the thing had been carved centuries ago. The Flock seemed to have only a rather incoherent polytheism for religion, and not to take that very seriously these days; but it was as strict about ritual and tradition as some classic British regiment—which, in many ways, it resembled.

Van Rijn trudged after, casting a glance behind. The females here looked little different from those in the Fleet: a bit smaller and slimmer than the males, their wings larger but without a fully developed spur. In fact, racially the two folk seemed identical.

And yet, if all that the company's agents had learned about Diomedes was not pure gibberish, the Drak'honai represented a biological monstrousness. An impossibility!

Trolwen followed the man's curious gaze, and sighed. "You can notice nearly half our nubile females are expecting their next cub."

"Hm-m-m. *Ja,* there is your problem. Let me see if I understand it right. Your young are all born at the fall equinox—"

"Yes. Within a few days of each other; the exceptions are negligible."

"But it is not so many ten-days thereafter you must leave for the south. Surely a new baby cannot fly?"

"Oh, no. It clings to the mother all the way; it is born with arms able to grasp hard. There is no cub from the preceding year; a nursing female does not get pregnant. Her two-year-old is strong enough to fly the distance, given rest periods in which it rides on someone's back—though that's the age group where we suffer the most loss. Three-year-olds and above need only be guided and guarded: their wings are quite adequate."

"But this makes much trouble for the mother, not so?"

"She is assisted by the half-grown clan members, or the old who are past childbearing but not yet too old to survive the journey. And the males, of course, do all the hunting, scouting, fighting, and so forth."

"So. You come to the south. I hear told it makes easy to live there, nuts and fruits and fish to scoop from the water. Why do you come back?"

"This is our home," said Trolwen simply.

After a moment: "And, of course, the tropic islands could never support all the myriads which gather there each midwinter—twice a year, actually. By the time the migrants are ready to leave, they have eaten that country bare."

"I see. Well, keep on. In the south, at solstice time, is when you rut."

"Yes. The desire comes on us—but you know what I mean."

"Of course," said Van Rijn blandly.

"And there are festivals, and trading with the other tribes . . . frolic or fight—" The Lannacha sighed. "Enough. Soon after solstice, we return, arriving here sometime before equinox, when the large animals on which we chiefly depend have awoken from their winter sleep and put on a little flesh. There you have the pattern of our lives, Eart'ho."

"It sounds like fun, if I was not too old and fat." Van Rijn blew his nose lugubriously. "Do not get old, Trolwen. It is so lonesome. You are lucky, dying on migration when you grow feeble, you do not live wheezy and helpless with nothing but your dear memories, like me."

"I'm not likely to get old as matters stand now," said Trolwen.

"When your young are born, all at once in the fall . . . *ja*," mused Van Rijn, "I can see how then is time for nothing much but obstetrics. And if you have not food and shelter and such helps all ready, most of the young die—"

"They are replaceable." said Trolwen, with a degree of casualness that showed he was, after all, not just a man winged and tailed. His tone sharpened. "But the females who bear them are more vital to our strength. A recent mother must be properly rested and fed, you understand, or she will never reach the south—and consider what a part of our total numbers are going to become mothers. It's a question of the Flock's survival as a nation! And those filthy Drakska, breeding all the year round like . . . like fish. . . . *No!*"

"No indeed," said Van Rijn. "Best we think of somethings very fast, or I grow very hungry, too."

"I spent lives to rescue you," said Trolwen, "because we all hoped you would think of something yourself."

"Well," said Van Rijn, "the problem is to get word to my own people at Thursday Landing. Then they come here quick, by damn, and I will tell them to clean up on the Fleet."

Trolwen smiled. Even allowing for the unhuman shape of his mouth, it was a smile without warmth or humor. "No, no," he said. "Not that easily. I dare not, cannot spare the folk, or the time and effort, in some crazy attempt to cross The Ocean . . . not while Drak'ho has us by the throat. Also—forgive me—how do I know that you will be interested in helping us, once you are able to go home again?"

He looked away from his companion, toward the porticoed cave that was the Males' Temple. Steam rolled from its mouth, there was the hiss of a geyser within.

"I myself might have decided otherwise," he added abruptly, in a very low voice. "But I have only limited powers—any plan of mine—the Council—do you see? The Council is suspicious of three wingless monsters. It thinks . . . we know so little about you . . . our only sure hold on you is your own desperation . . . the Council will allow no help to be brought for you until the war is over."

Van Rijn lifted his shoulders and spread his hands. "Confidential, Trolwen, boy, in their place I would do the same."

## X

Now darkness waned. Soon there would be light nights, when the sun hovered just under the sea and the sky was like white blossoms. Already both moons could be seen in full phase after sunset. As Rodonis stepped from her cabin, swift Sk'huanax climbed the horizon and swung up among the many stars toward slow and patient Lykaris. Between them, She Who Waits and He Who Pursues cast a shuddering double bridge over broad waters.

Rodonis was born to the old nobility, and had been taught to smile at Moons worship. Good enough for the common sailors, who would otherwise go back to their primitive bloody sacrifices to Aeak'ha-in-the-Deeps, but really, an educated person knew there was only the Lodestar. . . . Nevertheless, Rodonis went down on the deck, hooded herself with her wings, and whispered her trouble to bright mother Lykaris.

"A song do I pledge you, a song all for yourself, to be made by the Fleet's finest bards and sung in your honor when next you hold wedding with He Who Pursues you. You will not wed Him again for more than a year, the astrologues tell me; there will be time enough to fashion a song for you which shall live while the Fleet remains afloat, O Lykaris: if but you will spare me my Delp."

She did not address Sk'huanax the Warrior, any more than a male Drak'ho would have dreamed of petitioning the Mother. But she said to Lykaris in her mind, that there could be no harm in calling to his attention the fact the Delp was a brave person who had never omitted the proper offerings.

The moons brightened. A bank of cloud in the west bulked like frosty mountains. Far off stood the ragged loom of an island, and she could hear pack ice cough in the north. It was a big strange seascape, this was not the dear green Southwater whence starvation had driven the Fleet and she wondered if Achan's gods would ever let the Drak'honai call it home.

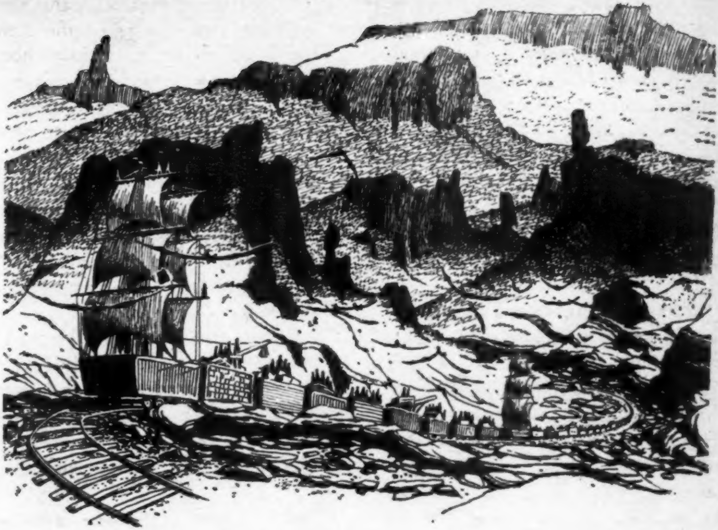
The *lap-lap* of waves, creaking timbers, cables that sang as the dew tautened them, wind-mumble in shrouds, a slatting sail, the remote plaintiveness of a flute and the nearer homely noises from this raft's own forecastle, snores and cub-whimpers and some couple's satisfied grunt . . . were a strong steady comfort in this cold emptiness named Achan Sea. She thought of her own young, two small furry shapes in a richly tapestried bed, and it gave her the remaining strength needed. She spread her wings and mounted the air.

From above, the Fleet at night was all clumps of shadow, with the rare twinkle of firepots where some crew worked late. Most were long abed, worn out from a day of dragging nets, manning sweeps and capstans, cleaning and salting and pickling the catch, furling and unfurling the heavy sails of the rafts, harvesting driss and fruitweed, felling trees and shaping timber with stone tools. A common crew member, male or female, had little in life except hard brutal labor. Their recreations were almost as coarse and violent: the dances, the athletic contests, the endless lovemaking, the bawdy songs roared out from full lungs over a barrel of seagrain beer.

For a moment, as such thoughts crossed her mind, Rodonis felt pride in her crewfolk. To the average noble, a commoner was a domestic animal, ill-mannered, unlettered, not quite decent, to be kept in line by whip and hook for his own good. But flying over the great sleeping beast of a Fleet, Rodonis sensed its sheer vigor, coiled like a snake beneath her—these were the lords of the sea, and Drak'ho's haughty banners were raised on the backs of Drak'ho's lusty deckhands.

Perhaps it was simply that her own husband's ancestors had risen from the forecastle not many generations back. She had seen him help his crew often enough, working side by side with them in storm or fish run; she had learned it was no disgrace to swing a quernstone or set up a massive loom for herself.

If labor was pleasing to the Lode-



star, as the holy books said, then why should Drak'ho nobles consider it distasteful? There was something bloodless about the old families, something not quite healthy. They died out, to be replaced from below, century after century. It was well-known that deckhands had the most offspring, skilled handicrafters and full-time warriors rather less, hereditary officers fewest of all. Why, Admiral Syranax had in a long life begotten only one son and two daughters. She, Rodonis, had two cubs already, after a mere four years of marriage.

Did this not suggest that the high Lodestar favored the honest person working with honest hands?

But no . . . those Lannach'honai all had young every other year, like machinery, even though many of the tykes died on migration. And the Lannach'honai did not work: not really: they hunted, herded, fished with their effeminate hooks, they were vigorous enough but they never stuck to a job through hours and days like a Drak'ho sailor . . . and, of course, their habits were just disgusting. *Animal!* A couple of tendays a year, down in the twilight of equatorial solstice, indiscriminate lust, and that was all. For the rest of your life, the father of your cub was only another male to you—not that you knew who he was anyway, you hussy!—and at home there was no modesty between the sexes, there wasn't even much distinction in everyday habits, because there was no more desire. Ugh!

Still, those filthy Lannach'honai had flourished, so maybe the Lodestar did not care. . . . No, it was too cold a thought, here in the night wind under ashen Sk'huanax. Surely the Lodestar had appointed the Fleet an instrument, to destroy those Lannach beasts and take the country they had been defiling.

Rodonis' wings beat a little faster. The flagship was close now, its turrets like mountain peaks in the dark. There were many lamps burning, down on deck or in shuttered rooms. There were warriors cruising endlessly above and around. The admiral's flag was still at the masthead, so he had not yet died; but the death watch thickened hour by hour.

*Like carrion birds waiting,* thought Rodonis with a shudder.

One of the sentries whistled her to a hover and flapped close. Moonlight glistened on his polished spearhead. "Hold! Who are you?"

She had come prepared for such a halt, but briefly, the tongue clove to her mouth. For she was only a female, and a monster laired beneath her.

A gust of wind rattled the dried things hung from a yardarm: the wings of some offending sailor who now sat leashed to an oar or a millstone, if he still lived. Rodonis thought of Delp's back bearing red stumps, and her anger broke loose in a scream:

"Do you speak in that tone to a sa Axollon?"

The warrior did not know her personally, among the thousands of Fleet citizens, but he knew an officer-class scarf; and it was plain to see that a life's toil had never been allowed to twist this slim-flanked body.

"Down on the deck, scum!" yelled Rodonis. "Cover your eyes when you address me!"

"I . . . my lady," he stammered, "I did not—"

She dove directly at him. He had no choice but to get out of the way. Her voice cracked whip-fashion, trailing her: "Assuming, of course, that your boatswain has first obtained my permission for you to speak to me."

"But . . . but . . . but—" Other fighting males had come now, to wheel as helplessly in the air. Such laws did exist; no one had enforced them to the letter for centuries, but—

An officer on the main deck met the situation when Rodonis landed. "My lady," he said with due deference, "it is not seemly for an unescorted female to be abroad at all, far less to visit this raft of sorrow."

"It is necessary," she told him. "I have a word for Captain T'heonax which will not wait."

"The captain is at his honored father's bunkside, my lady. I dare not—"

"Let it be your teeth he has pulled, then, when he learns that Rodonis sa Axollon could have forestalled another mutiny!"

She flounced across the deck and leaned on the rail, as if brooding her anger above the sea. The officer gasped. It was like a tail-blow to the stomach. "My lady! At once . . . wait, wait here, only the littlest of moments— Guard! Guard, there! Watch over my lady. See that she lacks not." He scuttled off.

Rodonis waited. Now the real test was coming.

There had been no problem so far. The Fleet was too shaken; no officer, worried ill, would have refused her demand when she spoke of a second uprising.

The first had been bad enough. Such a horror, an actual revolt against the Lodestar's own Oracle, had been unknown for more than a hundred years . . . and with a war to fight at the same time! The general impulse had been to deny that anything serious had happened at all. A regrettable misunderstanding . . . Delp's folk misled, fighting their gallant, hopeless fight out of loyalty to their captain . . . after all, you couldn't expect ordinary sailors to understand the more modern principle, that the Fleet and its admiral transcended any individual raft—

Harshly, her tears at the time only a dry memory, Rodonis rehearsed her interview with Syranax, days ago.

"I am sorry, my lady," he had said. "Believe me, I am sorry. Your husband was provoked, and he had more justice on his side than T'heonax. In fact, I know it was just a fight which happened, not planned, only a chance spark touching off old grudges, and my own son mostly to blame."

"Then let your son suffer for it!" she had cried.

The gaunt old skull wove back and forth, implacably. "No. He may not be the finest person in the world, but he is my son. And the heir. I haven't long to live, and wartime is no time to risk a struggle over the succession. For the Fleet's sake, T'heonax must succeed me without argument from anyone; and for this, he must have an officially unstained record."

"But why can't you let Delp go too?"

"By the Lodestar, if I could! But it's not possible. I can give everyone else amnesty, yes, and I will. But there must be one to bear the blame, one on whom to vent the pain of our hurts. Delp has to be accused of engineering a mutiny, and be punished, so that everybody else can say, 'Well, we fought each other, but it was all his fault, so now we can trust each other again.' "

The admiral sighed, a tired breath out of shrunken lungs. "I wish to the Lodestar I didn't have to do this. I wish . . . I'm fond of you too, my lady. I wish we could be friends again."

"We can," she whispered, "if you will set Delp free."

The conqueror of Maion looked bleakly at her and said: "No. And now I have heard enough."

She had left his presence.

And the days passed, and there was the farcical nightmare of Delp's trial, and the nightmare of the sentence passed on him, and the nightmare of waiting for its execution. The Lannach'ho raid had been like a moment's waking from fever-dreams: for it was sharp and real, and your shipmate was no longer your furtive-eyed enemy but a warrior who met the barbarian in the clouds and whipped him home from your cubs!

Three nights afterward, Admiral Syranax lay dying. Had he not fallen sick, Delp would now be a mutilated slave, but in this renewed tension and uncertainty, so controversial a sentence was naturally stayed.

Once T'heonax had the Admiralty, thought Rodonis in a cold corner of her brain, there would be no more delay. Unless—

"Will my lady come this way?"

They were obsequious, the officers who guided her across the deck and into the great gloomy pile of logs. Household servants, pattering up and down windowless corridors by lamplight, stared at her in a kind of terror. Somehow, the most secret things were always known to the forecastle, immediately, as if smelled.

It was dark in here, stuffy, and silent. *So* silent. The sea is never still. Only now did Rodonis realize that she had not before, in all her life, been shut away from the sound of waves and timber and cordage. Her wings tensed, she wanted to fly up with a scream.

She walked.

They opened a door for her; she went through, and it closed behind her with sound-deadening massiveness. She saw a small, richly furred and carpeted room, where many lamps burned. The air was so thick it made her dizzy. T'heonax lay on a couch watching her, playing with one of the Eart'ho knives. There was no one else.

"Sit down," he said.

She squatted on her tail, eyes smoldering into his as if they were equals.

"What did you wish to say?" he asked tonelessly.

"The admiral your father lives?" she countered.

"Not for long, I fear," he said. "Aeak'ha will eat him before noon." His eyes went toward the arras, haunted. "How long the night is!"

Rodonis waited.

"Well?" he said. His head swung back, snakishly. There was a rawness in his tone. "You mentioned something about . . . another mutiny?"

Rodonis sat straight up on her haunches. Her crest grew stiff. "Yes," she replied in a winter voice. "My husband's crew have not forgotten him."

"Perhaps not," snapped T'heonax. "But they've had sufficient loyalty to the Admiralty drubbed into them by now."

"Loyalty to Admiral Syranax, yes," she told him. "But that was never lacking. You know as well as I, what happened was no mutiny . . . only a riot, by males who were against you. Syranax they have always admired, if not loved.

"The *real* mutiny will be against his murderer."

T'heonax leaped.

"What do you mean?" he shouted. "Who's a murderer?"

"You are." Rodonis pushed it out between her teeth. "You have poisoned your father."

She waited then, through a time which stretched close to breaking. She could not tell if the notoriously violent male she faced would kill her for uttering those words.

Almost, he did. He drew back from her when his knife touched her throat. His jaws clashed shut again, he leaped onto his couch and stood there on all fours with back arched, tail rigid and wings rising.

"Go on," he hissed. "Say your lies. I know well enough how you hate my whole family, because of that worthless husband of yours. All the Fleet knows. Do you expect them to believe your naked word?"

"I never hated your father," said Rodonis, not quite steadily; death had brushed very close. "He condemned Delp, yes. I thought he did wrongly, but he did it for the Fleet, and I . . . I am of officer kindred myself. You recall, on the day after the raid I asked him to dine with me, as a token to all that the Drak'honai must close ranks."

"So you did," sneered T'heonax. "A pretty gesture. I remember how hotly spiced all the guests said the food was. And the little keepsake you gave him, that shining disk from the Eart'ho possessions. Touching! As if it were yours to give. Everything of theirs belongs to the Admiralty."

"Well, the fat Eart'ho had given it to me himself," said Rodonis. She was deliberately leading the conversation into irrelevant channels, seeking to calm them both. "He had recovered it from his baggage, he said. He called it a *coin* . . . an article of trade among his people . . . thought I might like it to remember him by. That was just after the . . . the riot . . . and just before he and his companions were removed from the *Gerunis* to that other raft."

"It was a miser's gift," said T'heonax. "The disk was quite worn out of shape— Bah!" His muscles bunched again. "Come. Accuse me further, if you dare."

"I have not been altogether a fool," said Rodonis. "I have left letters, to be opened by certain friends if I do not return. But consider the facts, T'heonax. You are an ambitious male, and one of whom most persons are willing to think the worst. Your father's death will make you Admiral, the virtual owner of the Fleet— how long you must have chafed, waiting for this! Your father is dying, stricken by a malady unlike any known to our chirurgeons: not even like any known poison, so wildly does it destroy him. Now it is known to many that the raiders did not manage to carry off every bit of the Eart'ho food: three small packets were left behind. The Eart'honai frequently and publicly warned us against eating any of their rations.

And *you* have had charge of all the Eart'ho things!"

T'heonax gasped.

"It's a lie!" he chattered. "I don't know . . . I haven't . . . I never—Will anyone believe I, anyone, could do such a thing . . . poison . . . to his own father?"

"Of you they will believe it," said Rodonis.

"I swear by the Lodestar—!"

"The Lodestar will not give luck to a Fleet commanded by a parricide. There will be mutiny on that account alone, T'heonax."

He glared at her, wild and panting. "What do you want?" he croaked.

Rodonis looked at him with the coldest gaze he had ever met. "I will burn those letters," she said, "and will keep silence forever. I will even join my denials to yours, should the same thoughts occur to someone else. But Delp must have immediate, total amnesty."

T'heonax bristled and snarled at her.

"I could fight you," he growled. "I could have you arrested for treasonable talk, and kill anyone who dared—"

"Perhaps," said Rodonis. "But is it worth it? You might split the Fleet open and leave us all a prey to the Lannach'honai. All I ask is my husband back."

"For that, you would threaten to ruin the Fleet?"

"Yes," she said.

And after a moment: "You do not understand. You males make the nations and wars and songs and science, all the little things. You imagine you are the strong, practical sex. But a female goes again and yet again under death's shadow, to bring forth another life. We are the hard ones. We have to be."

T'heonax huddled back, shivering.

"Yes," he whispered at last, "yes, curse you, shrivel you, yes, you can have him. I'll give you an order now, this instant. Get his rotten feet off my raft before dawn, d'you hear? But I did not poison my father." His wings beat thunderous, until he lifted up under the ceiling and threshed there, trapped and screaming. "I *didn't!*"

Rodonis waited.

Presently she took the written order, and left him, and went to the brig, where they cut the ropes that bound Delp hyr Orikan. He lay in her arms and sobbed. "I will keep my wings, I will keep my wings—"

Rodonis sa Axollon stroked his crest, murmured to him, crooned to him, told him all would be well now, they were going home again, and wept a little because she loved him.

Inwardly she held a chill memory, how old Van Rijn had given her the coin but warned her against . . . what had he said? . . . heavy metal poisoning. "To you, iron, copper, tin is unknown stuffs. I am not a chemist, me; chemists I hire when chemicking is needful; but I think better I eat a shovelful arsenic than one of your cubs try teething on this piece money, by damn!"

*And she remembered sitting up in the dark, with a stone in her hand, grinding and grinding the coin, until there was seasoning for the unbendable admiral's dinner.*

Afterward she recollected that the Eart'ho was not supposed to have such mastery of her language. It occurred to her now, like a shudder, that he could very well have left that deadly food behind on purpose, in hopes it might cause trouble. But how closely had he foreseen the event?

## XI

Guntra of the Enklann sept came in through the door. Eric Wace looked wearily up. Behind him, hugely shadowed between rush lights, the mill was a mumble of toiling forms.

"Yes?" he sighed.

Guntra held out a broad shield, two meters long, a light sturdy construction of wicker on a wooden frame. For many ten-days she had supervised hundreds of females and cubs as they gathered and split and dried the reeds, formed the wood, wove the fabric, assembled the unit. She had not been so tired since homecoming. Nevertheless, a small victory dwelt in her voice: "This is the four thousandth, Councilor." It was not his title, but the Lannacha mind could hardly imagine anyone without definite rank inside the Flock organization. Considering the authority granted the wingless creatures, it fell most naturally to call them Councilors.

"Good." He hefted the object in hands grown calloused. "A strong piece of work. Four thousand are more than enough; your task is done, Guntra."

"Thank you." She looked curiously about the transformed mill. Hard to remember that not so long ago it had existed chiefly to grind food.

Angrek of the Trekkans came up with a block of wood in his grasp. "Councilor," he began, "I—" He stopped. His gaze had fallen on Guntra, who was still in her early middle years and had always been considered handsome.

Her eyes met his. A common smokiness lit them. His wings spread and he took a stiff step toward her.

With a gasp, almost a sob, Guntra turned and fled. Angrek stared after her, then threw his block to the floor and cursed.

"What the devil?" said Wace.

Angrek beat a fist into his palm. "Ghosts," he muttered. "It must be ghosts . . . unrestful spirits of all the evildoers who ever lived . . . possessing the Drakska, and now come to plague us!"

Another pair of bodies darkened the door, which stood open to the short pale night of early summer. Nicholas van Rijn and Tolk the Herald entered.

"How goes it, boy?" boomed Van Rijn. He was gnawing a nitro-packed onion; the gauntness which had settled on Wace, even on Sandra, had not touched him. But then, thought Wace bitterly, the old blubberbucket didn't work. All he did was stroll around and talk to the local bosses and complain that things weren't proceeding fast enough.

"Slowly, sir." The younger man bit back words he would rather have said. *You bloated leech, do you expect to be carried home by my labor and my brains, and fob me off with another factor's post on another hell-planet?*

"It will have to be speeded, then," said Van Rijn. "We cannot wait so long, you and me."

Tolk glanced keenly at Angrek. The handicrafter was still trembling and whispering charms. "What's wrong?" he asked.

"The . . . an influence." Angrek covered his eyes. "Herald," he stammered, "Guntra of the Enklann was here just now, and for a moment we . . . we desired each other."

Tolk looked grave, but spoke without reproof. "It has happened to many. Keep it under control."

"But what *is* it, Herald? A sickness? A judgment? What have I done?"

"These unnatural impulses aren't unknown," said Tolk. "They crop up in most of us, every once in a while. But of course, one doesn't talk about it; one suppresses it, and does his or her best to forget it ever happened." He scowled. "Lately there has been more of such hankering than usual. I don't know why. Go back to your work and avoid females."

Angrek drew a shaky breath, picked up his piece of wood, and nudged Wace. "I wanted your advice; the shape here doesn't seem to me the best for its purpose—"

Tolk looked around. He had just come back from a prolonged journey, cruising over his entire homeland to bear word to scattered clans. "There has been much work done here," he said.

*"Ja,"* nodded Van Rijn complacently. "He is a talented engineer, him my young friend. But then, the factor on a new planet had pest-bedamned better be a good engineer."

"I am not so well acquainted with the details of his schemes."

"My schemes," corrected Van Rijn, somewhat huffily. "I tell him to make us weapons. All he does then is make them."

"All?" asked Tolk dryly. He inspected a skeletal framework. "What's this?"

"A repeating dart-thrower; a machine gun, I call it. See, this walking beam turns this spurred fly wheel. Darts are fed to the wheel on a belt —s-s-so—and tossed off fast: two or three in an eye-wink, at least. The wheel is swivel-mounted to point in all directions. It is an old idea, really, I think Miller or de Camp or someone first built it long ago. But it is one hard damn thing to face in battle."

"Excellent," approved Tolk. "And that over there?"

"We call it a ballista. It is like the Drak'ho catapults, only more so. This throws large stones, to break down a wall or sink a boat. And here—*ja*." Van Rijn picked up the shield Guntra had brought. "This is not so good advertising copy, maybe, but I think it means a bit more for us than the other machineries. A warrior on the ground wears one on his back."

"Mm-m-m . . . yes, I see where a harness would fit . . . it would stop missiles from above, eh? But our warrior could not fly while he wore it."

"Just so!" roared Van Rijn. "Just bloody-be-so! That is the troubles with you folk on Diomedes. Great balls of cheese! How you expect to fight a real war with nothing but all air forces, ha? Up here in Salmenbrok, I spend all days hammering into stupid officer heads, it is infantry takes and holds a position, by damn! And then officers have to beat it into the ranks, and practice them—gout of Judas! It is not time enough! In these few ten-days, I have to try make what needs years!"

Tolk nodded, almost casually. Even Trolwen had needed time and argument before he grasped the idea of a combat force whose main body was deliberately restricted to ground operations. It was too alien a concept. But the Herald said only: "Yes. I see your reasoning. It is the strong points which decide who holds Lannach, the fortified towns that dominate a countryside from which all the food comes. And to take the towns back, we will need to dig our way in."

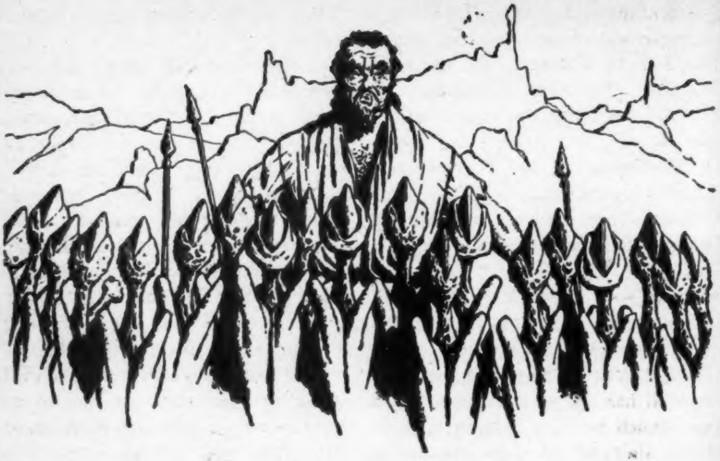
"You think smartly," approved Van Rijn. "In Earth history, it took some peoples a long time to learn there is no victory in air power alone."

"There are still the Drakska fire weapons," said Tolk. "What do you plan to do about them? My whole mission, these past ten-days, has been largely to persuade the outlying septs to join us. I gave them your word that the fire could be faced, that we'd even have flame-throwers and bombs of our own. I'd better have been telling the truth."

He looked about. The mill, converted to a crude factory, was too full of winged laborers for him to see far. Nearby, a primitive lathe, somewhat improved by Wace, was turning out spearshafts and tomahawk handles. Another engine, a whirling grindstone, was new to him: it shaped ax heads and similar parts, not as good as the handmade type but formed in wholesale lots. A drop hammer knocked off flint and obsidian flakes for cutting edges; a circular saw cut wooden members; a rope-twisting machine spun faster than the eye could follow. All of it was belt-powered from the great millwheels—all of it ludicrously haywired and cranky—but it spat forth the stuff of war faster than Lannach could use, filling whole bins with surplus armament.

"It is remarkable," said Tolk. "It frightens me a little."

"I make a new way of life here," said Van Rijn expansively. "It is not this machine or that one which has already changed your history beyond changing back. It is the basic idea



I have introduced: mass production."

"But the fire—"

"Wace has also begun to make us fire weapons. Sulfur they have gathered from Mount Oborch, and there are oil pools from which we are getting nice arsonish liquids. Distillation, that is another art the Drak'ho have had and you have not. Now we will have some Molotov cocktails for our own selves."

The human scowled. "But there is one thing true, my friend. We have not time to train your warriors like they should be to use this material. Soon I starve; soon your females get heavy and food must be stored." He heaved a pathetic sigh. "Though I am long dead before you folks have real sufferings."

"Not so," said Tolk grimly. "We have almost half a year left before Birthtime, true. But already we are weakened by hunger, cold, and despair. Already we have failed to perform many ceremonies—"

"Blast your ceremonies!" snapped Van Rijn. "I say it is Ulwen town we should take first, where it sits so nice overlooking Duna Brae that all the hornbeasts live at. If we have Ulwen, you have eats enough, also a strong point easy to defend. But no, Trolwen and the Council say we must strike straight for Mannenach, leaving Ulwen enemy-held in our rear, and going down clear to Sanga Bay where their rafts can get at us. For why? So you can hold some bluebefungused rite there!"

"You cannot understand," said Tolk gently. "We are too different. Even I, whose life's work it has been to deal with alien peoples, cannot grasp your attitude. But our life is the cycle of the year. It is not that we take the old gods so seriously any more—but their rituals, the rightness and decency of it all, the *belonging*—" He looked upward, into the shadow-hidden roof, where the wind hooted and rushed about the busy millwheels. "No, I don't believe that ancestral ghosts fly out there of nights. But I do believe that when I welcome High Summer back at the great rite in Mannenach, as all my forebears have done for as long as there has been a Flock . . . then I am keeping the Flock itself alive."

"Bah!" Van Rijn extended a dirt-encrusted hand to scratch the matted beard which was engulfing his face. He couldn't shave or wash: even given anti-allergen shots, human skin wouldn't tolerate Diomedean soap. "I tell you why you have all this ritual. First, you are a slave to the seasons, more even than any farmer on Earth back in our old days. Second, you must fly so much, and leave your homes empty all the dark time up here, that ritual is your most precious possession. It is the only thing you have not weighing too much to be carried with you everywhere."

"That's as may be," said Tolk. "The fact remains. If there is any chance of greeting the Full Day from Mannenach Standing Stones, we shall take it. The extra lives which are lost because this may not be the soundest strategy, will be offered in gladness."

"If it does not cost us the whole befouled war." Van Rijn snorted. "Devils and dandruff! My own chaplain at home, that pickle face, is not so fussy about what is proper. Why, that poor young fellow there was near making suicide now, just because he got a little bit excited over a wench out of wenching season, *nie?*"

"It isn't done," said Tolk stiffly. He walked from the shop. After a moment, Van Rijn followed.

Wace settled the point of discussion with Angrek, checked operations elsewhere, swore at a well-meaning young porter who was storing volatile petroleum fractions beside the hearth, and left. His feet were heavy at the end of his legs. It was too much for one man to do, organizing, designing, supervising, trouble-shooting— Van Rijn seemed to think it was routine to lift neolithic hunters into the machine age in a few weeks. He ought to try it himself! It might sweat some of the lard off the old hog.

The nights were so short now, only a paleness between two red clouds on a jagged horizon, that Wace no longer paid any heed to the time. He worked until he was ready to drop, slept a while, and went back to work.

Sometimes he wondered if he had ever felt rested . . . and clean, and well fed, and comforted in his aloneness.

Morning smoldered on northerly ridges, where a line of volcanoes smeared wrathful black across the sun. Both moons were sinking, each a cold coppery disk twice the apparent size of Earth's Luna. Mount Oborch shivered along giant flanks and spat a few boulders at the pallid sky. The wind came galing, stiff as an iron bar pressed against Wace's suddenly chilled back. Salmenbrok village huddled flinty barren under its loud quick thrust.

He had reached the ladder made for him, so he could reach the tiny loft-room he used, when Sandra Tamarin came from behind the adjoining tower. She paused, one hand stealing to her face. He could not hear what she said, in the blustery air.

He went over to her. Gravel scrunched under the awkward leather boots a Lannacha tailor had made him. "I beg your pardon, my lady?"

"Oh . . . it was nothing, Freeman Wace." Her green gaze came up to meet his, steadily and proudly, but he saw a redness steal along her cheeks. "I only said . . . good morning."

"Likewise." He rubbed sandy-lidded eyes. "I haven't seen you for some time, my lady. How are you?"

"Restless," she said. "Unhappy. Will you talk to me for a little, perhaps?"

They left the hamlet behind and followed a dim trail upward, through low harsh bushes breaking into purple bloom. High above them wheeled a few sentries, but those were only impersonal specks against heaven. Wace felt his heartbeat grow hasty.

"What have you been doing?" he asked.

"Nothing of value. What can I do?" She stared down at her hands. "I try, but I have not the skills, not like you the engineer or Freeman van Rijn."

"Him?" Wace shrugged. No doubt the old goat had found plenty of chance to brag himself up, as he lounged superfluous around Salmenbrok. "It—" He stopped, groping after words. "It's enough just to have my lady present."

"Why, Freeman!" She laughed, with genuine half-amused pleasure and no coyness at all. "I never thought you so gallant in the words."

"Never had much chance to be, my lady," he murmured, too tired and strength-emptied to keep up his guard.

"Not?" She gave him a sideways look. The wind laid its fingers in her tightly braided hair and unfurled small argent banners of it. She was not yet starved, but the bones in her face were standing out more sharply; there was a smudge on one cheek and her garments were clumsy baggings hurled together by a tailor who had never seen a human frame before. But somehow, stripped thus of queenliness, she seemed to him more beautiful than erstwhile—perhaps because of being closer? Because her poverty said with frankness that she was only human flesh like himself?

"No," he got out between stiff lips.

"I do not understand," she said.

"Your pardon, my lady. I was thinking out loud. Bad habit. But one does, on these outpost worlds. You see the same few men so often that they stop being company; you avoid them—and, of course, we're always undermanned, so you have to go out by yourself on various jobs, maybe for weeks at a time. Why am I saying all this? I don't know. Dear God, how tired I am!"

They paused on a ridge. At their feet there was a cliff tumbling through hundreds of meters down to a foam-white river. Across the canyon were mountains and mountains, their snows tinged bloody by the sun. The wind came streaking up the dales and struck the humans in the face.

"I see. Yes, it clears for me." Sandra regarded him with grave eyes. "You have had to work hard all your life. There has not been time for the pleasures, the learned manners and culture. Not?"

"No time at all, my lady," he said. "I was born in the slums, one kilometer from the old Triton Docks. Nobody but the very poor would live that close to a spaceport, the traffic and stinks and earthquake noise . . . though you got used to it, till it was a part of you, built into your bones. Half my playmates are now dead or in jail, I imagine, and the other half are scrabbling for the occasional half-skilled hard-and-dirty job no one else wants. Don't pity me, though. I was lucky. I got apprenticed to a fur wholesaler when I was twelve. After two years, I'd made enough contacts to get a hard-and-dirty job myself—only this was on a spaceship, fur-trapping expedition to Rhiannon. I taught myself a little something in odd moments, and bluffed about the rest I was supposed to know, and got a slightly better job. And so on and so on, till they put me in charge of this outpost . . . a very minor enterprise, which may in time become moderately profitable but will never be important. But it's a stepping stone. So here I am, on a mountain top with all Diomedes below me, and what's next?"

He shook his head, violently, wondering why his reserve had broken down. Being so exhausted was like a drunkenness. But more to it than that . . . no, he was *not* fishing for sympathy . . . down underneath, did he want to find out if she would understand? If she could?

"You will get back," she said quietly. "Your kind of man survives."

"Maybe!"

"It is heroic, what you have done already." She looked away from him, toward the driving clouds around Oborch's peak. "I am not certain anything can stop you. Except yourself."

"I?" He was beginning to be embarrassed now, and wanted to talk of other things. He plucked at his bristly red beard.

"Yes. Who else can? You have come so far, so fast. But why not stop? Soon, perhaps here on this mountain, must you not ask yourself how much farther it is worth going?"

"I don't know. As far as possible, I guess."

"Why? Is it necessary to become

great? Is it not enough to be free? With your talent and experience, you can make good-enough monies on many settled planets where men are more at home than here. Like Hermes, *exemplia.* In this striving to be rich and powerful, is it not merely that you want to feed and shelter the little boy who once cried himself hungry to sleep back in Triton Docks? But that little boy you can never comfort, my friend. He died long ago."

"Well . . . I don't know . . . I suppose one day I'll have a family. I'd want to give my wife more than just a living; I'd want to leave my children and grandchildren enough resources to go on—to stand off the whole world if they have to—"

"Yes. So. I think maybe—" he saw, before she turned her head from him, how the blood flew up into her face— "the old fighting Dukes of Hermes were like so. It would be well if we had a breed of men like them again—" Suddenly she began walking very fast down the path. "Enough. Best we return, not?"

He followed her, little aware of the ground he trod.

## XII

When the Lannachska were ready to fight, they were called to Salmenbrok by Tolk's Whistlers until the sky darkened with their wings. Then Trolwen made his way through a seethe of warriors to Van Rijn.

"Surely the gods are weary of us," he said bitterly. "Near always, at this time of year, there are strong south winds." He gestured at a breathless heaven. "Do you know a spell for raising dead breezes?"

The merchant looked up, somewhat annoyed. He was seated at a table outside the wattle-and-clay hut they had built for him beyond the village—for he refused to climb ladders, or sleep in a damp cave—dicing with Corps Captain Srygen for the beryl-like gemstones which were a local medium of exchange. The number of species in the galaxy which have independently invented some form of African golf is beyond estimation.

"Well," he snapped, "and why must you have your tail fanned? . . . Ah, seven! No, pox and pills, I remember, here seven is not a so good number. Well, we try again." The three cubes clicked in his hand and across the table. "Hm-m-m, seven again." He scooped up the stakes. "Double or nothings?"

"The ghost-eaters take it!" Srygen got up. "You've been winning too motherless often for my taste."

Van Rijn surged to his own feet like a broaching whale. "By damn, you take that back or—"

"I said nothing challengeable," Srygen told him coldly.

"You implied it. I am insulted, myself!"

"Hold on there," growled Trolwen. "What do you think this is, a beer feast? Eart'a, all the fighting forces of Lannach are now gathered on these hills. We cannot feed them here very long. And yet, with the new weapons loaded on the railway cars, we cannot stir until there is a south wind. What to do?"

Van Rijn glared at Srygen. "I said I was insulted. I do not think so good when I am insulted."

"I am sure the captain will apologize for any unintended offense," said Trolwen, with a red-shot look at them both.

"Indeed," said Srygen. He spoke it like pulling teeth.

"So." Van Rijn stroked his beard. "Then to prove you make no doubt about my honesties, we throw once more, *nie?* Double or nothings."

Srygen snatched the dice and hurled them. "Ah, a six you have," said Van Rijn. "It is not so easy to beat. I am afraid I have already lost. It is not so simple to be a poor tired hungry old man, far away from his home and from the Siamese cats who are all he has to love him for himself, not just his monies. . . . Tum-te-tum-te-tum. . . . Eight! A two, a three, a three! Well, well, well!"

"Transport," said Trolwen, hanging on to his temper by a hair. "The new weapons are too heavy for our porters. They have to go by rail. Without a wind, how do we get them down to Sagna Bay?"

"Simple," said Van Rijn, counting his take. "Till you get a good wind, tie ropes to the cars and all these so-husky young fellows pull."

Srygen blew up. "A free clan male, to drag a car like a . . . like a *Draka?*" He mastered himself and choked: "It isn't done."

"Sometimes," said Van Rijn, "these things must be done." He scooped up the jewels, dropped them into a purse, and went over to a well. "Surely you have some disciplines in this Flock."

"Oh . . . yes . . . I suppose so—" Trolwen's unhappy gaze went downslope to the brawling, shouting winged tide which had engulfed the village. "But sustained labor like that has always . . . long before the Drakska came . . . always been considered—perverted, in a way—it is not exactly forbidden, but one does not do it without the most compelling necessity. To labor in *public*—No!"

Van Rijn hauled on the windlass. "Why not? The Drak'honai, them, make all kinds tiresome preachments about the dignity of labor. For them it is needful; in their way of life, one must work hard. But for you? Why must one *not* work hard in Lannach?"

"It isn't right," said Srygen stiffly. "It makes us like some kind of animal."

Van Rijn pulled the bucket to the well coping and took a bottle of Earthside beer from it. "Ahhh, good and cold . . . hm-m-m, possibly too cold, damn all places without thermostatted coolers—" He opened the bottle on the stone curb and tasted. "It will do. Now, I have made travels, and I find that everywhere the manners and morals of peoples have some good reason at bottom. Maybe the race has forgotten why was a rule made in the first place, but if the rule does not make some sense, it will not last many centuries. Follows then that you do not like prolonged hard work, except to be sure migration, because it is not good for you for some reason. And yet it does not hurt the Drak'honai too much. Paradox!"

"Unlawfulness take your wonderings," snarled Trolwen. "It was your idea that we make all this newfangled apparatus, instead of fighting as our males have always fought. Now, how do we get it down to the lowlands without demoralizing the army?"

"Oh, that!" Van Rijn shrugged. "You have sports—contests—*nie?*"

"Of course."

"Well, you explain these cars must be brought with us and, while it is not necessary we leave at once—"

"But it is! We'll starve if we don't!"

"My good young friend," said Van Rijn patiently, "I see plain you have much to learn about politics. You Lannachska do not understand lying, I suppose because you do not get married. You tell the warriors, I say, that we can wait for a south wind all right but you know they are eager to come to grips with the foe and therefore they will be invited to play a small game. Each clan will pull so and so many cars down, and we time how fast it goes and make a prize for the best pullers."

"Well, I'll be accursed," said Srygen.

Trolwen nodded eagerly. "It's just the sort of thing that gets into clan traditions—"

"You see," explained Van Rijn, "it is what we call semantics on Earth. I am old and short with breath, so I can look unprejudiced at all these footballs and baseballs and potato races, and I know that a game is hard work you are not required to do."

He belched, opened another bottle, and took a half-eaten salami from his purse. The supplies weren't going to last very much longer.

## XIII

When the expedition was halfway down the Misty Mountains, their wind rose behind them. A hundred warriors harnessed to each railway car relaxed and waited for the timers whose hourglasses would determine the winning team.

"But they are not all so dim in the brain, surely," said Sandra.

"Oh, no," answered Wace. "But those who were smart enough to see through Old Nick's scheme were also smart enough to see it was necessary, and keep quiet."

He huddled in a mordant blast that drove down alpine slopes to the distant cloudy green of hills and valleys, and watched the engineers at work. A train consisted of about thirty light little cars roped together, with a "locomotive" at the head and another in the middle. These were somewhat more sturdily built, to support two high masts with square sails. Given wood of almost metallic hardness, plus an oil-drip over the wheels in lieu of ball bearings, plus the hurricane thrust of Diomedean winds, the system became practical. You didn't get up much speed, and you must often wait for a following wind, but this was not a culture bound to hourly schedules.

"It's not too late for you to go back, my lady," said Wace. "I can arrange an escort."

"No." She laid a hand on the bow which had been made for her—no toy, a 25-kilo killing tool such as she had often hunted with in her home forests. Her head lifted, the silver-pale hair caught chill ruddy sunlight and threw back a glow to this dark immensity of cliffs and glaciers. "Here we all stand or we all die. It would not be right for a ruler born to stay home."

Van Rijn hawked. "Trouble with aristocrats," he muttered. "Bred for looks and courage, not brains. Now *I* would go back, if not needed here to show I have confidence in my own plans."

"Do you?" asked Wace skeptically.

"Let be with foolishness," snorted Van Rijn. "Of course not." He trudged back to the staff car which had been prepared for him: at least it had walls, a roof, and a bunk. The wind shrieked down ringing stony canyons, he leaned against it with all his weight. Overhead swooped and soared the squadrons of Lannach.

Wace and Sandra each had a private car, but she asked him to ride down with her. "Forgive me if I make dramatics, Eric, but we may be killed and it is lonely to die without a human hand to hold." She laughed, a little breathlessly. "Or at least we can talk."

"I'm afraid—" He cleared a tightened throat ."I'm afraid, my lady, I can't converse as readily as . . . Freeman Van Rijn."

"Oh," she grinned, "that was what I meant. I said *we* can talk, not him only."

Nevertheless, when the trains got into motion, she grew as quiet as he.

Lacking their watches they could scarcely even guess how long the trip took. High summer had almost come to Lannach; once in twelve and a half hours, the sun scraped the horizon north of west, but there was no more real night. Wace watched the kilometers click away beneath him; he ate, slept, spoke desultorily with Sandra or with young Angrek who served as her aide, and the great land flattened into rolling valleys and forests of low fringe-leaved trees, and the sea came near.

Now and again a hotbox or a contrary wind delayed the caravan. There was restlessness in the ranks: they were used to streaking in a day from the mountains to the coast, not to wheeling above this inchworm of a railway. Drak'honai scouts spied them from afar, inevitably, and a detachment of rafts lumbered into Sagna Bay with powerful reinforcements. Raids probed the flanks of the attackers. And still the trains must crawl.

In point of fact, there were eight

Diomedean revolutions between the departure from Salmenbrok and the Battle of Mannenach.

The harbor town lay on the Sagna shore, well in from the open sea and sheltered by surrounding wooded hills. It was a gaunt grim-looking complex of stone towers, tightly knitted together with the usual tunnels and enclosed bridges, talking in the harsh tones of half a dozen big windmills. It overlooked a small pier, which the Drak'honai had been enlarging. Beyond, dark on the choppy brown waters, rocked two score enemy craft.

As his train halted, Wace jumped from Sandra's car. There was nothing to shoot at yet: Mannenach revealed only a few peaked roofs thrusting above the grassy ridge before him. Even against the wind, he could hear the thunder of wings as the Drak'honai lifted from the town, twisting upward in a single black mass like some tornado made flesh. But heaven was thick with Lannachska above him, and the enemy made no immediate attack.

His heart thumped, runaway, and his mouth was too dry for him to speak. Almost hazily, he saw Sandra beside him. A Diomedean bodyguard under Angrek closed around in a thornbush of spears.

The girl smiled. "This is a kind of relief," she said. "No more sitting and worrying, only to do what we can, not?"

"Not indeed!" puffed Van Rijn, stumping toward them. Like the other humans, he had arranged for an ill-fitting cuirass and helmet of laminated hard leather above the baggy malodorous native clothes. But he wore two sets of armor, one on top of the other, carried a shield on his left arm, had deputed two young warriors to hold another shield over him like a canopy, and bore a tomahawk and a beltful of stone daggers. "Not if I can get out of it, by damn! You go ahead and fight. I will be right behind you—as far behind as the good saints let."

Wace found his tongue and said maliciously: "I've often thought there might be fewer wars among civilized races, if they reverted to this primitive custom that the generals are present at the battles."

"Bah! Ridiculous! Just as many wars, only using generals who have guts more than brains. I think cowards make the best strategists, stands to reason, by damn. Now I stay in my car." Van Rijn stalked off, muttering.

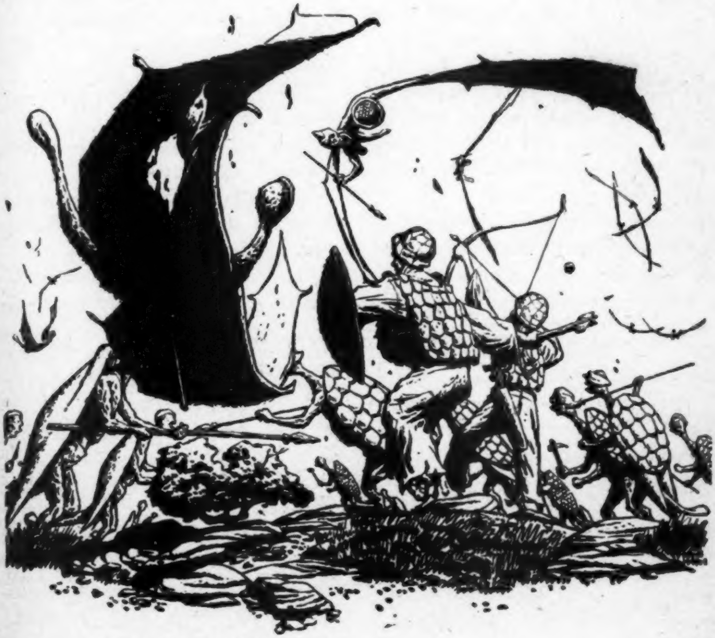
Trolwen's newly-formed field artillery corps were going frantic, unloading their clumsy weapons from the trains and assembling them while squads and patrols skirmished overhead. Wace cursed—here was something he could do!—and hurried to the nearest confusion. "Hoy, there! Back away! What are you trying to do? Here, you, you, you, get up in the car and unlash the main frame . . . that piece *there,* you clothead!" After a while, he almost lost consciousness of the fighting that developed around him.

The Mannenach garrison and its sea-borne reinforcements had begun with cautious probing, a few squadrons at a time swooping to flurry briefly with some of the Lannachska flying troops and then pull away again toward the town. Drak'ho forces here were outnumbered by a fair margin; Trolwen had reasoned correctly that no admiral would dare leave the main Fleet without a strong defense while Lannach was still formidable. In addition, the sailors were puzzled, a little afraid, at the unprecedented attacking formations.

Fully half the Lannachska were ranked on the ground, covered by rooflike shields which would not even permit them to fly! Never in history had such a thing been known!

During an hour, the two hordes came more closely to grips. Much superior in the air, the Drak'honai punched time after time through Trolwen's fliers. But integrated by the Whistler corps, the aerial troops closed again, fluidly. And there was little profit in attacking the Lannachska infantry—those awkward wicker shields trapped edged missiles, sent stones rebounding, an assault from above was almost ignored.

Arrows were falling thickly when Wace had his last fieldpiece assem-



bled. He nodded at a Whistler, who whirled up immediately to bear the word to Trolwen. From the commander's position, where he rode a thermal updraft, came a burst of messengers—banners broke out on the ground, war whoops tore through the wind, it was the word to advance!

Ringed by Angrek's guards, Wace remained all too well aware that he was at the forefront of an army. Sandra went beside him, her lips untense. On either hand stretched spear-jagged lines of walking dragons. It seemed like a long time before they had mounted the ridge.

One by one, Drak'honai officers realized . . . and yelled their bafflement.

These stolid ground troops, unassailable from above, unopposed below, were simply pouring over the hill to Mannenach's walls, trundling their siege tools. When they arrived there, they got to work.

It became a gale of wings and weapons. The Drak'honai plunged, hacked and stabbed at Trolwen's infantry—and were in their turn attacked from above, as his fliers whom they had briefly dispersed resumed formation. Meanwhile, *crunch, crunch, crunch,* rams ate at Mannenach; detachments on foot went around the town and down toward the harbor.

"Over there! Hit 'em again!" Wace heard all at once that he was yelling.

Something broke through the chaos overhead. An arrow-filled body crashed to earth. A live one followed it, a Drak'ho warrior with the air pistol-cracking under his wings. He came low and fast; one of Angrek's lads thrust a sword at him, missed, and had his brains spattered by the sailor's tomahawk.

Without time to know what had happened, Wace saw the creature before him. He struck, wildly, with his own stone ax. A wing-buffet knocked him to the ground. He bounced up, spitting blood, as the Drak'ho came about and dove again. His hands were empty— Suddenly the Drak'ho screamed and clawed at an arrow in his throat, fluttered down and died.

Sandra nocked a fresh shaft. "I told you I would have some small use today," she said.

"I—" Wace reeled where he stood, looking at her.

"Go on," she said. "Help them break through. I will guard."

Her face was even paler than before, but there was a green in her eyes which burned.

He spun about and went back to directing his sappers. It was plain now that battering rams had been a mistake; they wouldn't get through mortared walls till Matthewsmas. He took everyone off the engines and put them to helping those who dug. With enough wooden shovels—or bare hands—they'd be sure to strike a tunnel soon.

From somewhere near, there lifted a clatter great enough to drown out the struggle around him. Wace jumped up on a ram's framework and looked over the heads of his engineers.

A body of Drak'honai had resorted to the ground themselves. They were not drilled in such tactics; but then, the Lannachska had had only the sketchiest training. By sheer sustained fury the Drak'honai were pushing their opponents back. From Trolwen's airy viewpoint, thought Wace, there must be an ugly dent in the line.

Where the devil were the machine guns?

Yes, here came one, bouncing along on a little cart. Two Lannachska began pumping the flywheel, a third aimed and operated the feed. Darts hosed across the Drak'honai. They broke up, took to the sky again. Wace hugged Sandra and danced her across the field.

Then hell boiled over on the roofs above him. His immediate corps had finally gotten to an underground passage and made it a way of entry. Driving the enemy before them, up to the top floors and out, they seized this one tower in a rush.

"Angrek!" panted Wace. "Get me up there!" Someone lowered a rope. He swarmed up it, with Sandra close behind. Standing on the ridgepole, he looked past stony parapets and turning millwheels, down to the bay. Trolwen's forces had taken the pier without much trouble. But they were getting no farther: a steady hail of fire-streams, oil bombs, and catapult missiles from the anchored rafts staved them off. Their own similar armament was outranged.

Sandra squinted against the wind, shifted north to lash her eyes to weeping, and pointed "Eric—do you recognize that flag, on the largest of the vessels there?"

"Hm-m-m . . . let me see . . . yes, I do. Isn't that our old chum Delp's personal banner?"

"So, it is. I am not sorry he has escaped punishment for the riot we made. But I would rather have someone else to fight, it would be safer."

"Maybe," said Wace. "But there's work to do. We have our toe hold in the city. Now we'll have to beat down doors and push out the enemy—room by room—and you're staying here!"

"I am not!"

Wace jerked his thumb at Angrek. "Detail a squad to take the lady back to the trains," he snapped.

"No!" yelled Sandra.

"You're too late," grinned Wace. "I arranged for this before we ever left Salmenbrok."

She swore at him—then suddenly, softly, she leaned over and murmured beneath the wind and the warshrieks: "Come back hale, my friend."

He led his troopers into the tower.

Afterward he had no clear memory of the fight. It was a hard and bloody operation, ax and knife, tooth and fist, wing and tail, in narrow tunnels and cavelike rooms. He took blows, and gave them; once, for several minutes, he lay unconscious, and once he led a triumphant breakthrough into a wide assembly hall. He was not fanged, winged, or caudate himself, but he was heavier than any Diomedean, his blows seldom had to be repeated.

The Lannachska took Mannenach because they had — not training enough to make them good ground fighters—but enough to give them the *concept* of battle with immobilized wings. It was as revolting to Diomedean instincts as the idea of fighting with teeth alone, hands bound, would be to a human; unprepared for it, the Drak'honai bolted and ran ratlike down the tunnels in search of open sky.

Hours afterward, staggering with exhaustion, Wace climbed to a flat roof at the other end of town. Tolk sat there waiting for him.

"I think . . . we have . . . it all now," gasped the human.

"And yet not enough," said Tolk haggardly. "Look at the bay."

Wace grabbed the parapet to steady himself.

There was no more pier, no more sheds at the waterfront—it all stood in one black smoke. But the rafts and canoes of Drak'ho had edged into the shallows, forming a bridge to shore; and over this the sailors were dragging dismounted catapults and flamethrowers.

"They have too good a commander," said Tolk. "He has gotten the idea too fast, that our new methods have their own weaknesses."

"What is . . . Delp . . . going to do?" whispered Wace.

"Stay and see," suggested the Herald. "There is no way for us to help."

The Drak'honai were still superior in the air. Looking up toward a sky low and gloomy, rain clouds driving across angry gunmetal waters. Wace saw them moving to envelope the Lannacha air cover.

"You see," said Tolk, "it is true that their fliers cannot do much against our walkers—but the enemy chief has realized that the converse is also true."

Trolwen was too good a tactician himself to be cut up in such a fashion. Fighting every centimeter, his fliers retreated. After a while there was nothing in the sky but gray wrack.

Down on the ground, covered by arcing bombardment from the rafts, the sailors were setting up their mobile artillery. They had more of it than the Lannachska, and were better shots. A few infantry charges broke up in bloody ruin.

"Our machine guns they do not possess, of course," said Tolk. "But then, we do not have enough to make the difference."

Wace whirled on Angrek, who had joined him. "Don't stand here!" he cried. "Let's get down—rally our folk—seize those— It can be done, I tell you!"

"Theoretically, yes." Tolk nodded his lean head. "I can see where a person on the ground, taking advantage of every bit of cover, might squirm his way up to those catapults and flamethrowers, and tomahawk the operators. But in practice—well, we do not have such skill."

"Then what would you do?" groaned Wace.

"Let us first consider what will assuredly happen," said Tolk. "We have lost our trains; if not captured, they will be fired presently. Thus our supplies are gone. Our forces have been split, the fliers driven off, we groundlings left here. Trolwen cannot fight his way back to us, being outnumbered. We at Mannenach do outnumber our immediate opponents by quite a bit. But we cannot face their artillery.

"Therefore, to continue the fight, we must throw away all our big shields and other new-fangled items, and revert to conventional air tactics. But this infantry is not well equipped for normal combat: we have few archers, for instance. Delp need only shelter on the rafts, behind his fire weapons, and for all our greater numbers we'll be unable to touch him. Meanwhile he will have us pinned here, cut off from food and material. All the excess war goods your mill produced is valueless lying up in Salmenbrok. And there will certainly be strong reinforcements from the Fleet."

"To hell with that!" shouted Wace. "We have the town, don't we? We can hold it against them till they rot!"

"What can we eat while they are rotting?" said Tolk. "You are a good craftsman, Eart'a, but no student of war. The cold fact is, that Delp managed to split our forces, and therefore he has already won. I propose to cut our losses by retreating now, while we still can."

And then suddenly his manner broke, and he stooped and covered his eyes with his wings. Wace saw that the Herald was growing old.

## XIV

There was dancing on the decks, and jubilant chants rang across Sagna Bay to the enfolding hills. Up and down and around, in and out, the feet and the wings interwove till timbers trembled. High in the rigging, a piper skirled their melody; down below, a great overseer's drum which set the pace of the oars now thuttered their stamping rhythm. In a ring of wing-folded bodies, sweat-gleaming fur and eyes aglisten, a sailor whirled his female while a hundred deep voices roared the song:

*" . . . A-sailing, a-sailing,*
*a-sailing to the Sea of Beer,*
*fair lady, spread your sun-bright*
*wings*
*and sail with me!"*

Delp walked out on the poop and looked down at his folk.

"There'll be many a new soul in the Fleet, sixty ten-days hence," he laughed.

Rodonis held his hand, tightly. "I wish—" she began.

"Yes?"

"Sometimes . . . oh, it's nothing—" The dancing pair fluttered upward, and another couple sprang out to beat the deck in their place; planks groaned under one more huge ale barrel, rolled forth to celebrate victory. "Sometimes I wish we could be like them."

"And live in the forecastle?" said Delp dryly.

"Well, no . . . of course not—"

"There's a price on the apartment, and the servants, and the bright clothes and leisure," said Delp. His eyes grew pale. "I'm about to pay some more of it."

His tail stroked briefly over her back, then he beat wings and lifted into the air. A dozen armed males followed him. So did the eyes of Rodonis.

Under Mannenach's battered walls the Drak'ho rafts lay crowded, the disorder of war not yet cleaned up in the haste to enjoy a hard-bought victory. Only the full-time warriors remained alert, though no one else would need much warning if there should be an attack. It was the boast of the forecastle that a Fleet sailor, drunk and with a female on his knee, could outfight any three foreigners sober.

Delp, flapping across calm waters under a high cloudless day-sky, found himself weighing the morale value of such a pride against the sharp practical fact that a Lannach'ho fought like ten devils. The Drak'honai had won *this* time.

A cluster of swift canoes floated aloof, the admiral's standard drooping from one garlanded masthead. T'heonax had come at Delp's urgent request, instead of making him go out to the main Fleet—which might mean that T'heonax was prepared to bury the old hatred. (Rodonis would tell her husband nothing of what had passed between them, and he did not urge her; but it was perfectly obvious she had forced the pardon from the heir in some way.) Far more likely, though, the new admiral had come to keep an eye on this untrusted captain, who had so upset things by turning the holding operation on which he had been contemptuously ordered, into a major victory. It was not unknown for a field commander with such prestige to hoist the rebel flag and try for the Admiralty.

Delp, who had no respect for T'heonax but positive reverence for the office, bitterly resented that imputation.

He landed on the outrigger as prescribed and waited until the Horn of Welcome was blown on board. It took longer than necessary. Swallowing anger, Delp flapped to the canoe and prostrated himself.

"Rise," said T'heonax in an indifferent tone. "Congratulations on your success. Now, you wished to confer with me?" He patted down a yawn. "Please do."

Delp looked around at the faces of officers, warriors, and crewfolk. "In private, with the admiral's most trusted advisors, if it please him," he said.

"Oh? Do you consider what you have to say is that important?" T'heonax nudged a young aristocrat beside him and winked.

Delp spread his wings, remembered where he was, and nodded. His neck was so stiff it hurt. "Yes, sir, I do," he got out.

"Very well." T'heonax walked leisurely toward his cabin.

It was large enough for four, but only the two of them entered, with the young court favorite, who lay down and closed his eyes in boredom. "Does not the admiral wish advice?" asked Delp.

T'heonax smiled. "So you don't intend to give me advice yourself, captain?"

Delp counted mentally to twenty, unclenched his teeth, and said:

"As the admiral wishes. I've been thinking about our basic strategy, and the battle here has rather alarmed me—"

"I didn't know you were frightened."

"Admiral, I . . . never mind! Look here, sir, the enemy came within two fishhooks of beating us. They had the town. We've captured weapons from them equal or superior to our own, including a few gadgets I've never seen or heard of . . . and in incredible quantities, considering how little time they had to manufacture the stuff. Then too, they had these abominable new tactics, ground fighting—not as an incidental, like when we board an enemy raft, but as the main part of their effort!

"The only reason they lost was insufficient co-ordination between ground and air, and insufficient flexibility. They should have been ready to toss away their shields and take to the air in fully equipped squadrons at an instant's notice.

"And I don't think they'll neglect to remedy that fault, if we give them the chance."

T'heonax buffed his nails on a sleek-furred arm and regarded them critically. "I don't like defeatists," he said.

"Admiral, I'm just trying not to underestimate them. It's pretty clear they got all these new ideas from the Eart'honai. What else do the Eart'honai know?"

"Hm-m-m. Yes." T'heonax raised his head. A moment's uneasiness flickered in his gaze. "True. What do you propose?"

"They're off balance now," said Delp with rising eagerness. "I'm sure the disappointment has demoralized them. And of course, they've lost all that heavy equipment. If we hit them hard, we can end the war. What we must do is inflict a decisive defeat on their entire army. Then they'll have to give up, yield this country to us or die like insects when their birthing time comes."

"Yes." T'heonax smiled in a pleased way. "Like insects. Like dirty, filthy insects. We won't let them emigrate, captain."

"They deserve their chance," protested Delp.

"That's a question of high policy, captain, for me to decide."

"I'm . . . sorry, sir." After a moment: "But will the admiral, then, assign the bulk of our fighting forces to . . . to some reliable officer, with orders to hunt out the Lannach'honai?"

"You don't know just where they are?"

"They could be almost anywhere in the uplands, sir. That is, we have prisoners who can be made to guide us and give some information; Intelligence says their headquarters is a place called, Psalmenbrox. But of course they can melt into the land." Delp shuddered. To him, whose world had been lonely islands and flat sea horizon, there was horror in the tilted mountains. "It has infinite cover to hide them. This will be no easy campaign."

"How do you propose to wage it at all?" asked T'heonax querulously. He did not like to be reminded, on top of a victory celebration and a good dinner, that there was still much death ahead of him.

"By forcing them to meet us in an all-out encounter, sir. I want to take our main fighting strength, and some native guides compelled to help us, and go from town to town up there, systematically razing whatever we find, burning the woods and slaughtering the game. Give them no chance for the large battues on which they must depend to feed their females and cubs. Sooner or later, and probably sooner, they will have to gather every male and meet us. That's when I'll break them."

"I see." T'heonax nodded. Then, with a grin: "And if they break you?"

"They won't."

"It is written: 'The Lodestar shines for no single nation.' "

"The admiral knows there's always some risk in war. But I'm convinced there's less danger in my plan than in hanging about down here, waiting for the Eart'honai to perfect some new devilment."

T'heonax's forefinger stabbed at Delp. "Ah-hah! Have you forgotten, their food will soon be all gone? We can count them out."

"I wonder—"

"Be quiet!" shrilled T'heonax.

After a little time, he went on: "Don't forget, this enormous expeditionary force of yours would leave the Fleet ill defended. And without the Fleet, the rafts, we ourselves are finished."

"Oh, don't be afraid of attack, sir—" began Delp in an eager voice.

"Afraid!" T'heonax puffed himself out. "Captain, it is treason to hint that the admiral is a . . . is not fully competent."

"I didn't mean—"

"I shall not press the matter," said T'heonax smoothly. "However, you may either make full abasement, craving my pardon, or leave my presence."

Delp stood up. His lips peeled back from the fangs, all the race memory of animal forebears who had been hunters bade him tear out the other's throat. T'heonax crouched, ready to scream for help.

Very slowly, Delp mastered himself. He half turned to go. He paused, fists jammed into balls and the membrane of his wings swollen with blood.

"Well?" smiled T'heonax.

Like an ill-designed machine, Delp went down on his belly. "I abase myself," he mumbled. "I eat your offal. I declare that my fathers were the slaves of your fathers. Like a netted fish, I gasp for pardon."

T'heonax enjoyed himself. The fact that Delp had been so cleverly trapped between his pride and his wish to serve the Fleet, made it all the sweeter.

"Very good, captain," said the admiral when the ceremony was done. "Be thankful I didn't make you do this publicly. Now let me hear your argument. I believe you were saying something about the protection of our rafts."

"Yes . . . yes, sir. I was saying . . . the rafts need not fear the enemy."

"Indeed? True, they lie well out at sea, but not too far to reach in a few hours. What's to prevent the Flock army from assembling, unknown to you, in the mountains, then attacking the rafts before you can come to our help?"

"I would only hope they do so, sir." Delp recovered a little enthusiasm. "But I'm afraid their leadership isn't that stupid. Since when . . . I mean . . . at no time in naval history, sir, has a flying force, unsupported from the water, been able to overcome a fleet. At best, and at heavy cost, it can capture one or two rafts . . . temporarily, as in the raid when they stole the Eart'honai. Then the other vessels move in and drive it off. You see, sir, flyers can't use the engines of war, catapults and flamethrowers and so on, which alone can reduce a naval organization. Whereas the raft crews can stand under shelters and fire upward, picking the fliers off at leisure."

"Of course." T'heonax nodded. "All this is so obvious as to be a gross waste of my time. But your idea is, I take it, that a small cadre of guards would suffice to hold off a Lannach'ho attack of any size."

"And, if we're lucky, keep the enemy busy out at sea till I could arrive with our main forces. But as I said, sir, they must have brains enough not to try it."

"You assume a great deal, captain," murmured T'heonax. "You assume, not merely that I will let you go into the mountains at all, but that I will put you in command."

Delp bent his head and drooped his wings. "Apology, sir."

"I think . . . yes, I think it would be best if you just stayed here at Mannenach with your immediate flotilla."

"As the admiral wishes. Will he consider my plan, though?"

"Aeak'ha eat you!" snarled T'heonax. "I've no love for you, Delp, as well you know; but your scheme is good, and you're the best one to carry it through. I shall appoint you in charge."

Delp stood as if struck with a maul.

"Get out," said T'heonax. "We will have an official conference later."

"I thank my lord admiral—"

"Go, I said!"

When Delp had gone, T'heonax

turned to his favorite. "Don't look so worried," he said. "I know what you're thinking. The fellow will win his campaign, and become still more popular, and somewhere along the line he will get ideas about seizing the Admiralty."

"I only wondered how my lord planned to prevent that," said the courtier.

"Simple enough." Theonax grinned. "I know his type. As long as the war goes on, there's no danger of rebellion from him. So, let him break the Lannach'honai as he wishes. He'll pursue their remnants, to make sure of finishing the job. And in that pursuit—a stray arrow from somewhere — most regrettable — these things are easy to arrange. Yes."

TO BE CONCLUDED

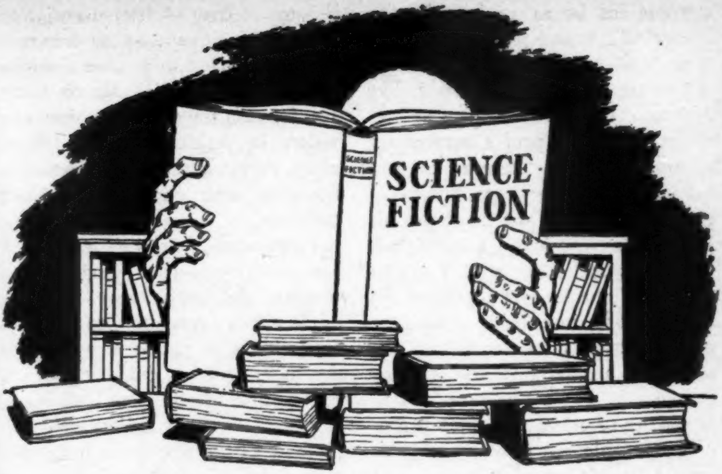
# IN TIMES TO COME

Next issue Eric Frank Russell leads off (not for the first time!) and has a story titled "Basic Right." A lot of people have the proposition that the Basic Right of "I have a right to my own opinion" is guaranteed by the nature-of-things, or something.

The Universe does guarantee you a basic right of that general sort, of course . . . but it's been rather seriously misunderstood. You've got a basic right to *try* any opinion you like . . . but this doesn't mean you have a right to try it and get away with it.

If you live on the basis of accepting the consequences of trying, as well as demanding the right of trying . . . well, other people might be remarkably misled into thinking you a pushover. Like the Invaders in Russell's story, for instance. Poor old Earth didn't put up any resistance at all . . .

THE EDITOR.



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## BY P. SCHUYLER MILLER

## TIME AND TIME AGAIN

WHENEVER someone is griped by an attack of ingrowing conscience to the point of launching a crusade against the non-science of science fiction, time travel, "dimensions," lost races, and ESP are usually the prime targets. As you know, I am not convinced that ESP is all fraud or nonsense, but I do have my own intolerance of Great Races lost in the backwoods, and I'll have to admit that I can see no rational grounds in present-day physics for walking through walls or traveling through time. Faster-than-light travel, which should have been added to the list of outcasts, draws some kind of semantic justification from the very relativity that prohibits it.

Writers use these cliché themes, of course, because they are useful: time travel with the rest. You can play endlessly with the paradoxes of the concept, as in my own "—As Never Was," and perhaps come up with a solution that gives rise to a whole school of science fiction, like Murray Leinster's "Sidewise in Time." You can send a present-day observer into the future, to live happily in a utopia or unhappily in a utopia, or just to have all kinds of adventures in a more "advanced" world than ours. You can send him into the past for about the same reasons: to evaluate some period of history in modern terms—the one thing a good historical novelist does *not* do—or just to romp around in a series of events that interest you, or that enable you to show off your special knowledge of that time and locale. You can also use time travel to burlesque our traditional pictures of the past, as Mark Twain did with his "Connecticut Yankee" and as Henry Kuttner and Arthur K. Barnes did alone and together in their "Pete Manx" yarns for *Thrilling Wonder,* as "Kelvin Kent." This has been done most recently in William Golding's hilarious section of "Sometime, Never" (Ballantine, 35¢), with its misadventures of a Roman emperor who probably never existed.

Last August two major publishers offered novels by serious novelists, using the time-travel-past theme. In Robin Carson's "Pawn of Time"—Henry Holt, N. Y.; 442 pp.; $4.95—a modern hero is plunged into the turbulence of Renaissance Italy. In "Below the Salt," by Thomas B. Costain (Doubleday & Co., Garden City; 480 pp.; $3.95), a United States Senator of Irish ancestry seems to remember his life as a squire in twelfth century England and France, during the events that led to Magna Carta. He does his traveling in a dream or vision, in which his whole life of seven hundred years ago pops into his head, with details that he later confirms.

From where I sit, the Carson book—a first novel—is a delightful success, and the Costain novel—in spite of the author's reputation and obvious research—is as flat as a tapestry of the times, and as quick to fade. I won't argue if you class both books as fantasy, but both authors are trying to show us the past through modern eyes, and that is the gambit of science fiction.

Heitman Urban of New York's Beekman Place simply thinks himself into Venice of 1521, in the course of a café conversation. You'll have to swallow the unlikely fact that he arrives there in his own body, but in someone else's sixteenth century clothes, with a knowledge of the language, and with a hefty purse of gold from some mystical source. With this furniture out of the way, hero and author settle down to having the time of their—and your—lives.

Our friend becomes Don Jaiman Urban de Biqueman, after befriending a young Spanish officer who can't swim. In rather rapid succession he abducts the very willing natural daughter of Lucrezia Borgia from a nunnery, joins a raggle-taggle "army" of a hundred in an attempt to take Rome, agrees to rescue a damsel from the Spanish inquisition, spends a goodly amount of time as a galley slave, meets another time-wanderer from the century before his own, introduces fencing to the Renaissance, makes a fortune, founds a couple of families. In a word, he's busy.

And it's as convincing a job of portraying the mad contrasts of the sixteenth century as Robert Heinlein does in a look into the future. Heitman is, and remains, a man from the twentieth century; he sees and feels as a modern man would; but little by little he grows into a sixteenth century man. The things that happen to him develop out of the conflict between his original self and his new one. And because he is of our time, he probes and blunders into situations that no native would have, and struggles out again in his own personal way. This is pretty close to my ideal of what a time-travel-past novel should be.

There's every bit as much research poured into the nearly five hundred pages of eight-point—which means fine—type in "Below the Salt," and it's continually getting in the way of the plot, the period, and the people. It's a book within a book: Senator Richard O'Rawn, after turning up an assortment of evidence that he could only have known about if he'd lived seven hundred years ago, dictates to his young secretary a lengthy account of his experiences as a young freedman and squire, Tostig, beginning in England of 1175. Tostig and his friend and master, young Richard of Rawen, become deeply involved in the struggle for succession after the death of Richard the Lion Hearted. They take up the cause of beautiful Eleanor of Brittany, imprisoned by King John after her brother Arthur, the direct heir, has been murdered. Tostig has an added interest: Eleanor's natural half-sister, Giselle. And inevitably the story leads up to Magna Carta and the deep roots of today's freedoms.

The period, the people, the events are every bit as colorful and a good deal more significant than those of Carson's Italy of the post-Borgia days. But Richard, Tostig, Eleanor and all the rest walk stolidly through their parts as if they were rehearsing with scripts in hand. The author uses the modern point of view, but editorially, as Senator O'Rawn sees it, not as Tostig experiences it. And nobody changes, down through the years, as kingdoms fall, princesses turn gray, babies grow to manhood.

Moral: there's a rich opportunity to cast new light on the past and bring it vividly alive, to have fun with history, in the time travel gambit. But you have to know how to use it—and even though you are an experienced and popular historical novelist, that's no guarantee that you can do the trick.

What's needed is the kind of lively, thoughtful imagination that is one of the essentials of good science fiction. Robin Carson has it; Thomas Costain hasn't.

CRISIS IN 2140, by H. Beam Piper & John J. McGuire.
GUNNER CADE, by Cyril Judd. Ace Books, N. Y. D-227. 1957. 120 + 198 pp. 35¢

The reprint side of this Ace double is one of the best of the C. M. Kornbluth-Judith Merril collaborations—the story of a mercenary, Gunner Cade, whose loyalties grow sadly mixed as he is forced to think for himself.

The Piper-McGuire yarn was serialized here in 1953, and although the theme is familiar by now, the execution is good. It shows us a future in which current trends toward anti-intellectualism have dominated our society. A small core of Literates carry on the business of the country, while a majority of militant Illiterates enjoy the spoils. Lawlessness is the order of the day, and life in a scholroom is an extrapolated stereotype of a "blackboard jungle," in which the teachers must have bodyguards. The Literates are scheming to gain invisible control; their strongest enemies are out to destroy them. The whole thing blows up in a terrific battle in a department store. Fun for all.

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FRANK KELLY FREAS: A PORTFOLIO. Advent Publishers, 3508 N. Sheffield Ave., Chicago 13, Illinois. 1957. 38 pp. $1.50

This consists of sixteen black-and-white illustrations plus two-color front and back covers (the back one upside-down on my copy, maybe by accident, maybe to be cute), with a one-page biography and photo of the artist. Seven of the plates and this back cover were originally Astounding illustrations.

On the whole, the portfolio represents Freas' varied style quite well, but I'm sure there were other illos that deserved perpetuation on good paper more than some of these—especially the next to the last. The stock is good, and the staples should come out easily if you want to mat or frame any of them.

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SOMETIME, NEVER, by William Golding, John Wyndham and Mervyn Peake. Ballantine Books, New York. No. 215. 1957. 185 pp. 35¢

The hard-cover edition of this book was published in 1956 in England. It contains three original novelettes: William Golding's "Envoy Extraordinary," John Wyndham's "Consider Her Ways," and Mervyn Peake's prelude to his Gothic novel, "Titus Groan," a symbolic nightmare called "Boy in Darkness." Of these, the first is a kind of science fiction, the second comes closer to formula, and the third is unclassifiable fantasy.

Golding's episode of high comedy is a kind of "if" yarn, set in the time of one of the later Roman emperors. He's not identified, and I am not scholar enough to pin him down. A wild-haired Alexandrian Greek with a mysterious sister puts in his appearance with three inventions that are certain, he feels, to remake the Roman world—a steamship, gunpowder, and a third revealed only at the end. Mixing these inventions with an attempted *putsch* by a would-be dictator, the Emperor smoothly diverts events into a wild, zany finale worthy of the Marx Brothers in partnership with Cecil B. De Mille.

In the Wyndham story, a disturbed young Englishwoman experiments with a new drug and finds herself in the body of a Mother, one of the breeder-class in a society patterned on the ants, in which men have been eliminated and women lead a frozen, hideously sterile life that—like the ants'—leaves no room for personality or variation, year after year, century after century. Nothing really happens: the story exists to show you this society.

The third story is the strangest of all. I have never read the author's "Titus Groan," a long novel in a modern version of the old Gothic style. This episode, it seems, is a prelude to the book or a fragment of a new novel introducing the Boy at fourteen. In a kind of walking nightmare that has the ring of Hodgson's "Night Land" and a less archaic Lovecraft, this Boy escapes from his castle home on the night of his birthday celebration, is hunted across the hills, and stumbles into a strange land where symbolically bestialized man-things have their lair in an abandoned mine. He is discovered by the Goat, trapped by the Hyena, and taken to their softly horrible master, the Lamb to bargain for life, soul and body. This may all mean more if you know about the Boy's later life, and the world of which he is a part: as it is, you have a flesh-scraping glimpse of loathsomeness in which the meaning of the horror is never quite clear.

You may not like the last two parts of the book, but they are hard to forget—and the first is pure joy.

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CONQUEST OF EARTH, by Manly Banister. Avalon Books, New York. 1957. 224 pp. $2.75

This is a 1955-56 *Amazing* yarn that—since the original copyright is intact—may not have been condensed like most of these 224-page Avalon editions. It's an unpretentious superman tale that moves nicely with few bumps or shocks, but gets off the road a bit in the later chapters.

Kor Danay is a youngster who has earned the robes of a Scarlet Sage, in a far future Earth and Galaxy dominated by the energy-feeding flame-things, the Trisz. He is a superman in the Gosseyn tradition: not only can he perform the mental and scientific prodigies of his Order, passed down through the centuries and slowly built up through the generations, but he alone can draw down the Fire Out of Heaven, and he alone has an extra mind whose powers he barely imagines.

So Kor Danay finds himself fighting friend and foe, as an underground order of Men tests him and the Trisz try to block him. He finds powers and loses them, finds a wife and loses her, falls into peril and hoists himself out. Struck down on a far world, he struggles back with the secret of the Trisz . . . but I'd rather have seen this part handled differently. And the cabalistic doggerel of the Trisz computer just doesn't make sense, nohow!

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TAKE ME TO YOUR PRESIDENT, by Leonard Wibberley. G. P. Putnam's Sons, New York. 1957. 186 pp. $3.50

Here is a delightfully light arrangement of a reliable SF theme, by the author of "The Mouse That Roared"—tiny European principality invades New York and captures a super-bomb — with which almost nothing is wrong but the price.

Jerry Blackwood, a big, slow-moving, straight-thinking Yorkshireman with a nondescribable dog, blunders into a rocket that England is building near his village of Mars. He accidentally takes it up, and comes down in a lake on a Paiute-Shoshone reservation in Nevada, where—thanks to the spacesuit he is wearing and the outlandish appearance of Rover, he is taken for a visitor from the planet Mars.

Sensing his opportunity to make good on a lifelong ambition, "A-1" —his nickname back in the pub in Mars—says: "Take me to your president." Meanwhile, England is trying to finagle a way out of a diplomatically tight spot, and Russia is trying to find a way to profit from whatever is going on. A-1 merely wants a disarmament program with teeth . . .

It's not what happens in this kind of book. That is old stuff to us, if not to the general public. What counts is how it's done, and in any book of Wibberley's that is likely to be pleasantly.

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MAN INTO SPACE, by Hermann Oberth. Harper & Brothers, New York. 1957. 232 pp. $4.50

To the generation that grew up on Hugo Gernsback's bulletins from the world of the V.f.R. and the German rocket pioneers, Hermann Oberth will always be the Grand Old Man of rocketry. From the beginning, more than thirty-five years ago, he insisted that the ultimate goal of rocket science was space travel. His single-mindedness, and his refusal to put an arbitrary limit on what engineering and mathematics told him was possible, did much to give early rocket science a "crackpot" stigma. This, with his Rumanian birth, kept him from using his knowledge as he might have in the German wartime rocket program: it may be lucky that he came late to Peenemunde. After the war, and internment, he and his ideas went into eclipse again, and it has been only since 1955 that his imagination and enthusiasm have brought him back on the highroad to space.

"Man Into Space" is a book that I wish Willy Ley might have translated. I know nothing about G. P. H. De Freville, who did the job, but he certainly does nothing to overcome what may have been a difficult style in German, and he positively labors to get across ideas that have long been accepted, digested and relegated to the axiomatic. European engineering terms—the Ross-Smith arm, for example—that could have been clarified in a footnote or a caption, are left dangling. There is at least one rank arithmetical blooper: he doesn't realize that you use a different factor in converting meters and *square* meters to yards and square yards.

Oberth's ideas, tumbled out one after the other, cry out for a Gernsback of the great days to publicize them and a Frank R. Paul to picture them. His designs for satellites, spacesuits, space mirrors, moon cars, have an air of inspired patchwork about them, as if these things were pieced together of parts Oberth had found lying around the shop and lab, with no time for Hollywood inspired design. And yet, as his step-by-step reasoning makes clear, these monstrosities—a "small" space station with two whirling living-compartments five miles apart—a space mirror ninety miles in diameter—an interplanetary ship propelled by an "electric wind"—a moon car that hops across crevasses on a kind of built-in pogo stick with a caterpillar tread—asteroids towed out of space to make conveniently placed landing stations—these things have careful reasoning behind them. How careful, a fifty-eight-page mathematical appendix will show you, if you care to take the trouble.

Even today, I suspect that the big names among the rocket engineers will look a little embarrassed if they're asked about some of these things. The satellites and moon rockets in the trade-paper ads *look* so much more businesslike and "scientific" than these gangling tangles of wires and girders and spinning wheels. But I'd be the last to say that the look of the future won't be more like Hermann Oberth's sketches than Madison Avenue's.

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RE-ENTER FU MANCHU, by Sax Rohmer. Gold Medal Books, N. Y. No. S-684. 1957. 144 pp. 35¢

Strictly for the record, "the arch-criminal of the world is back." He is *not*—as the publisher's blurb claims—attempting "the theft of a complete atom bomb." On the contrary, he has a gadget—essentially the good old force-screen of revered memory—that will furnish protection against atom bombs or any other form of air attack. Installing it, he argues, will put him and his Si Fan in control of every military base in the world.

Fu Manchu is still using his favorite immortality elixir, an "antacoid" that must be administered every thirty years, give or take a couple of publication dates. Hiring out to the Communists, he uses them for his own insidious ends. What a villain! And what a shnook of a hero! Only the pictorial quality of the heroines holds up.

Strictly from and for nostalgia.

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VANISHED CITIES, by Hermann and Georg Schreiber. Alfred A. Knopf, New York. 1957. 344 + xiv pp. $5.75

LOST CITIES, by Leonard Cottrell. Rinehart & Co., New York. 1957. 251 pp. $4.50

The lure of lost cities—and by implication, lost civilizations—has always been a strong factor in science fiction, declining in importance as our knowledge of the hidden corners of the planet has increased. It undoubtedly has a good deal to do with the current popularity of books on archeology. These two books, published within a few weeks of each other, not only cast some fascinating new light on certain phases of Man's past, but make clear some of the weaknesses of such books as sources of information for such as me and thee.

"Vanished Cities" is by far the better of the two, though it may not be the more readable and interesting for anyone who hasn't a bent toward antiquity. The authors are Austrian: Georg a student of history and classical archaeology, Hermann an editor and free-lance writer. The combination is ideal, and the translation seems excellent—the German edition appeared in 1955.

The Schreibers have done what few, if any, American writers are able to do. They have gone, on the one hand, to a number of different Greek and Roman historians and geographers, and on the other to excavation reports published in obscure professional journals, in French, German, Italian and a number of other languages. Very few of these materials are available in any but the very largest and most specialized American libraries, and some of the archaeological journals and reports—the latter, for the most part, expensive and published in small editions—may not be in any but a few private libraries. But the Schreibers have found these sources, they have used them understandingly, and their book shows it.

Leonard Cottrell, an English archaeological journalist (his publishers say "Egyptologist," but it seems to be on the same basis that might make me an "archaeologist"—interest and wide reading), seems not to have had these resources, or not to have used them if he did. I am not referring to the bibliography in his book: this is intended for the reader, and lists primarily the general, secondary books that the average person can find. But in the two chapters on American cities, of which I have some knowledge, he has not used the latest work or, always, the best.

The two books complement each

other. They overlap only in their sections on Pompeii, the Indus cities, and Babylon—and there is no real duplication. Cottrell is telling the story of the *discovery* of these lost cities of ancient times—the finding. The Schreibers are writing the reconstructed histories of the cities themselves—the losing. Cottrell is the more readable; his story moves faster, and he knows how to point up the dramatic. The Schreibers do more to bring back the life of the ancient peoples they describe, but you may find the details of what forces under what leader destroyed a city on a certain day, a bit boring.

You'll get from these books, I think, a dawning appreciation of how poor and sparse a picture of the ancient world our histories and history courses give us. Greek history, for example, is apt to touch sweepingly on Athens and Sparta—but what picture does it give you of the tremendous sweep of Greek colonization over the Mediterranean world, founding cities that were great and prosperous even before the cities of the homeland reached their peak? Does it make clear the extraordinary trade contacts that existed throughout Europe, Asia and Africa, from the earliest times?

Have you caught a glimpse of the probable Negro empire in East Africa — possibly ruled by descendants of the Nubian kings who for a time governed Egypt—that built Zimbabwe and traded gold to merchants from as far away as Malaya and China? Did you think that the sunken Breton city of Ys was an invention of Robert W. Chambers and A. Merritt? It's on a Roman road map, our one clue to when it was lost. Do you remember Jurgen Spanurth's claim that he had found Atlantis at the bottom of the North Sea? Those waters have swallowed up other, documented cities.

In Cottrell's book, on the other hand, you'll find the amazing story of the lost Hittites, once one of the great people of the world, then lost from history except for a few cryptic and still puzzling references in the Bible. You'll visit the jungle-engulfed citadels of medieval Ceylon. You'll go with the first romanticists, Thompson and Willard, to the very late Maya city at Cichen Itza—but you'll find no mention of the real pioneer, Stephens, or of the discoveries of later excavators, or of the other, older and greater cities that rose and fell long before the Toltec-dominated city of the Itzas. You'll glimpse Bingham's search for the lost Inca stronghold, Vilcabamba, but never discover that very few modern archaeologists agree that he found it in Macchu Picchu—and get very little idea at all of that amazing city of the crags itself.

To quote the Schreibers: "How in the course of centuries the rank of cities changes, how old ones decline simply because they cannot keep pace with the growth of others, and how new ones rise to greatness" . . . this is the story both books tell, in their different ways. Until you've sampled them, and especially "Vanished

Cities," you'll have no idea how much the histories have left unsaid.

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## AMONG THE REPRINTS

PEBBLE IN THE SKY, by Isaac Asimov. Bantam Books — No. A1646. 200 pp. 35¢. The author's first hardback (1950) and one of his best books. Tailor Joseph Schwartz is snatched from a Chicago street into the midst of a far-future revolution.

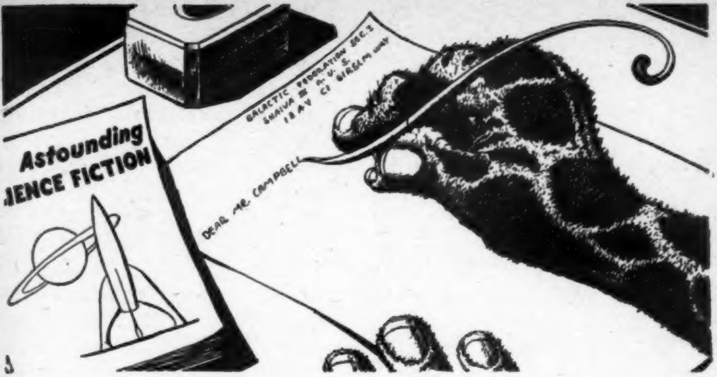
CITY AT WORLD'S END, by Edmond Hamilton. Crest Books—No. S184. 160 pp. 35¢. An entire city is hurled a million years into the future, to make a new start for Mankind. A very discriminating friend, who picked up the book by chance, was thrilled.

EVOLUTION IN ACTION, by Julian Huxley. Mentor Books—No. MD204. 141 pp. 50¢. The noted English biologist, brother of Aldous Huxley of "Brave New World," shows us the natural forces that have made Man and will make him whatever he becomes.

CRUCIBLES: THE STORY OF CHEMISTRY, by Bernard Jaffe. Premier Books—No. S49. 240 pp. 35¢. This classic, which traces the development of chemistry through the achievements of a series of great chemists, originally appeared in 1930 and was revised in 1942 and 1948. The new paperback edition is much abridged, but it is also up-dated to include some of the recent nuclear work, in which the alchemists' dream of transmutation has been made real.

STRANGERS IN THE UNIVERSE, by Clifford D. Simak. Berkeley Books—G-71. 190 pp. 35¢. Seven stories by an able practitoner. The hardcover edition is only about a year old.

OFF ON A COMET, by Jules Verne. Ace Books—D-245. 318 pp. 35¢. This is the wildest and least known of Verne's romances, and the one chosen to launch *Amazing Stories* back in 1926. A passing comet chips off a piece of North Africa, carrying Hector Servadac and assorted associates miraculously among the outer planets, and eventually depositing them neatly back where they started. This is not a new translation, but it has been abridged and "modernized." When I can lay my hands on a copy of the old edition, I'll tell you what that means.



# BRASS TACKS

Dear Mr. Campbell:

It seems possible that Mr. Randall Garrett's account of some hitherto unknown letters concerning some influences on the early life of The Most Reverend Dr. Isaac Newton (ASF; October, 1957) has a rather sinister explanation.

A chance remark of Dr. Newton's mathematics professor—"Youth is inclined . . . to rush in, as the saying goes, where angels fear to tread."—indicates a deliberate tampering on his part with the structure of time since he paraphrases a poet, Alexander Pope, who was not born until twenty-one years after the letter was written.—Donald MacDonald, 2519 Derby Street, Berkeley 5, California.

*You never can tell the limitations of a really great genius, can you?*

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Dear Mr. Campbell:

I write to take up Mr. Randall Garrett's amusing challenge in "Gentlemen: Please Note," October, 1957, p. 78. Yes! some readers of science fiction do read other things than the *Bulletin of the Atomic Scientists.*

The sentence in question is as follows: "Youth is inclined to be impetuous, to rush in, as the saying goes, where angels fear to tread."

These lines are dated 9 January 1667. In Alexander Pope's "An Essay On Criticism," 11. 622-625:

> No place so sacred from such fops
>   is barr'd,
> Nor is Paul's church more safe
>   than Paul's churchyard:
> Nay, fly to Alters; there they'll talk
>   you dead:
> For Fools rush in where Angels
>   fear to tread.

The "Essay On Criticism" was written in 1709, and appeared in 1711.

In return for writing this out I hope to hear in next month's "Brass Tacks," how many other people noticed Mr. Garrett's clever trick and what percentage of ASF's readers they make up.—John Jorrocks, Jr., Apt. 12D, 410 W. 24th St., New York 11, New York.

*Hm-m-m—well, on different time tracks things happen at different dates, maybe?*

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Dear John:

In my article "The Whenabouts of Radioactivity" (December 1957), I said that the total amount of energy produced by radioactivity in the Earth was seven and a half trillion ($7.5 \times 10^{12}$) kilocalories per second. After subtracting heat losses through radiation, I said there was still "an ample supply of energy to account for volcanoes, for earthquakes, for mountain-building" and so on.

Actually, this was partly an intelligent—I hoped—guess, because I didn't have the exact—or estimated—figure on the energy expended in various geological pheonomena. The other day, however, I came across an article in *Nature* (November 2, 1957) which estimated that there were a million earthquakes a year on Earth and that the total energy released by them amounted to $1.2 \times 10^{27}$ ergs. This, I calculate is equivalent to thirty trillion kilocalories.

What this means, then, the energy liberated by radioactivity within the Earth in four seconds is sufficient to account for all the earthquakes in one year.—Isaac Asimov.

*The ratio is about that between the energy put out as electricity on the line to that appearing as vibration in a powerhouse generator!*

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Dear Mr. Campbell:

In your Brass Tacks for November you asked that anyone having a set of Finnagle's Laws send them in for the edification of younger readers. Actually, great a scientific genius as could be credited to Finnagle, he failed to grasp that the underlying principle of his laws was as universal as the law of gravitation. On working with his laws my husband and I have discovered that they actually are parts of the Law of the Universal Perversity of Matter.

The perversity of matter can be broken down into various types.

There is, for instance, the climatological. The commonest phenomenon of this group is the rainfall immediately after the washing of a car or the cleaning of windows, the cold wave as soon as all furnaces are closed for the warm weather, et cetera. Natives of Florida and California are especially well acquainted with this part of the Law.

A second type is the "bug" in items mechanical. The car that runs smoothly until miles from any garage, the appliance that operates perfectly only while a repairman is there, and the immediate breakdown of anything the day after the manufacturer's guarantee runs out.

Finnagle's first law "If in a laboratory experiment anything can go wrong . . . it will" exemplifies another field of the Law, along with Murphy's Constant that "Matter will be damaged in direct proportion to its value." There is also a gravitational branch—shown by Sprinkle's law that "things fall at right angles," and the invariant that toast always falls buttered side down. These all give only a smattering of the ramifications of the Law; further applications are being discovered daily.

The degrees of action of the Law of the Perversity of Matter are measured by Strang's Misery Units—irreverently known as UGS. A full table of value has not been completed. Subjective factors are proving troublesome here. So far the base unit has not been clearly and irrevocably defined. Frankly, on this, we need help. If, perhaps, you could pass on to us Finnagle's address, that eminent man might be willing to assist us.—(Mrs.) Mickey Strang, 1709 E. Silver, Tucson, Arizona.

*There is also the matter of highways: the finer a highway is, the more people crowd it to unusability.*

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To the Editor:

HOW TO LOSE THE RACE FOR THE STARS

1. Education: Our schools trade physics, chemistry, mathematics and hard work for the short-cut, the pleasing personality, and the easy way. We reward the glad-hander for his social adjustment, and scorn as an egghead the plodder who hacks his way through the solid undergrowth of systematic learning. Result; we produce the best salesmen in the world, while others train the best scientists and mathematicians.

2. Charmed Circle: For one of our engineers to have merely a fine technical education, a background of valuable experience, or a clever new idea is not enough; he must have money, pull, the pleasing and impressive personality, and the ability to "sell" himself. In Russia an engineer can gain prompt recognition even though he be a bookish mousey fellow peering through thick lenses, just so long as he delivers the goods. We have a charmed circle of polished brass surrounded by an impenetrable pentagon, while they have the field wide open to anyone with merit.

3. SECRECY: We encourage our newspapers and our politicians to talk far too much, while we so gag our scientists that they cannot carry on their proper business; the Russians clamp down on their newspapers and politicians, but encourage their scientists to communicate freely with each other. We pamper our politicians, protect our newsmen, but make our physicists expendable; they nurse their men of science, and make their politicians expendable.

4. PAY CHECK: We reserve our fattest pay envelope for the engineer who can design and produce the most saleable chromium-plated gadgets; the Russians offer not only money but a number of other extraordinary privileges to those who can design and produce effective armaments. The inevitable result; we get the best juke boxes, and—of course—they get the best rockets.—N. Samuel.

*And here, an engineer with an unorthodox idea, is considered not quite sound—to be viewed with suspicion. In Russia, since they have no established orthodox traditions, or established authorities to maintain traditions, originality is rewarded, not punished.*

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Dear Mr. Campbell:

Things have gone far enough. I've not minded up to now your espousal of every new natural law as one discovered by this fellow "Finnagle." But now, when you want to attribute the fine work of others in the field to him, I balk. Let me put the record straight.

Finagle—only one *n*, please note—did some excellent work, but it must be remembered that his name is affixed to only one concept of science. It was Finagle who discovered the peculiarities of the Factor which bears his name. In its simplest form, the Finagle Factor is expressed as

$$\text{Wrong Answer}\left\{\begin{matrix}\pm\\ \times\\ \div\end{matrix}\right\}\text{Finagle Factor} = \text{Right Answer}$$

Application of one or more of the four operations, singly or in succession, will always yield the correct answer to any problem.

In more sophisticated scientific work, where the answering of problems is less important than the recovery of consistent data, the Finagle Factor is put to wide use, but is known more widely in its modified form as developed by the brilliant and prolific scientist, Murphy.

The only variable constant—or constant variable, if you are left-handed—known to man, Murphy's Constant has been an invaluable tool to the scientist, its use having led to such key discoveries as that of the *o*-meson. (o for ornery). This little bit of matter is what's left over when everything else in the nucleus has been accounted for.

Perhaps the most important use of the Finagle calculations was made by Murphy some years ago, when he first formulated the laws which you now try to attribute to Finagle, who died before they were published. It is *Murphy's* First Law which states succinctly

> *If anything can go wrong, it*
> *will.* (1)

A recent development, perhaps not so widely known outside of the Institute, has been the discovery of the Quantization of Murphy's Law Characteristics. It was proven here at MIT that no continuous function would account for things going wrong; it became increasingly apparent that such characteristics were quantized, in accordance with Planck's laws of quantum mechanics. The important work of the research group under the famous Foocomm grant has led to the statement of the Quantization Revision of Murphy's Law (fittingly abbreviated as QRM)

> *Everything goes wrong all at*
> *once.* (2)

The Foocomm group—whose major researchers were Appling, Degenhardt, Northrop, and Van Benschoten—also have been responsible for the Step-Ahead Principle, which is a qualitative measure of the increasing complexity of the work the more you get done. The statement of this principle is called Stockmayer's Theorem after the man who first stated it in this form:

> *If it looks easy, it's tough;*
> *If it looks tough, it's damn*
> *well impossible.* (3)

I hope this will clarify matters to you and your readers, John. Just to tie things up, however:

It *was* Finagle who made the famous epigrammatic remark, "Science is Truth; don't be misled by Facts!" Finagle, a fine researcher to the very end, was killed in a tragic accident just when he was proving that the Boston Rapid Transit system *does* have infinite connectivity. He was run over by an invisible subway train on the nonexistent Brattle Loop. Needless to say, this loop has been sealed off from the rest of the system.

Professor Murphy still lives, however, and his work is still becoming part of the standard literature. He has a human side, too; he can frequently be seen cheering up some student with three quizzes and a term paper due on the same day with his own peculiar philosophy,

"Smile . . . Tomorrow will be worse!"

For the An lab for the November ASF:

1. Citizen of the Galaxy (3) by RAMacH.
   The only weak spot so far is the fact that Thorby doesn't *do* anything; he's always done by. Odds are on that the Rudbeks, as my friend FX Maher points out, are slavers.
2. The Shrines of Earth. Silverberg.
   Nothing short of amazing development in such a short story.
3. The Gentle Earth, by Anvil.
   Only because it was longer than

the remaining short, and thus had more time to be less bad.

4. One per cent Inspiration. Wellen. Only the last word is interesting on an otherwise senseless tale.

John, whatever has happened to Jack Williamson, Everett B. Cole, and H. B. Fyfe?—J. Martin Graetz, 32 Fayette Street, Cambridge 39, Massachusetts.

*There is great dispute as to just who produced these famous laws; some say Fin(n)agle, some Murphy, some attribute them to Dr. Von Nagle, Dr. Henri Bougerre, or Dr. Gwen T. Diddle.*

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Dear John:

In machine shop practice, one of Finagle's Laws is called the Fourth Law of Thermodynamics:

> *Even if it is impossible to incorrectly assemble a part, still a way will be found to do it wrong.*

This law is immutable.

In reference to the letter by Isaac Asimov, it occurred to me several years ago that the expression *half-life* obviously implied much more radiation at any earlier date, and at that time, while I was reading Lecomte du Nouy's metaphysical "Human Destiny," that more abundant radioactivity working on the molecular soup of the warm seas might be one datum that would refute the work. Certainly in those primordial seas there were no bacteria to devour any newly formed organic compounds. Too, in attacking "Human Destiny," I could not escape realizing that in any chance within a series, no matter how great the odds against it, the happening can by definition occur at any point within the boundaries of the series: thus, one chance in googolplex *could* occur anywhere along the series-line from one to googolplex. Nor does the size of the odds necessarily preclude a happening.—Helen M. Urban, 6520 Satsuma Avenue, North Hollywood, California.

*In other words, statistics says nothing about any individual.*

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Dear Sir:

Being a Finnaglian scholar, I highly resent the fact that to date Finnagle has been recognized only for his observations concerning the impossibility of experiment. Actually, these discoveries were made quite by accident while he was trying to prove a very fundamental discovery, which is: *"If a string has one end, then it has another end."* Although this law may appear quite simple at first glance, it has far-reaching consequences concerning the general hanging-togetherness of the universe. This is especially true if the words "string" and "end" are given sufficiently broad definitions.—Ed Miksch, 264 N. Pleasant Street, Amherst, Massachusetts.

*The two great services science, and scientists like the late great Dr.*

*Finnagle, serve are (1) to show which way we can progress, and (2) to warn of bad curves, slippery patches, dead ends, and bad bumps on the road to achievement.*

---

Dear Sir:

Your quest is hopeless. A complete set of Finnagle's Laws will never be compiled. This is a necessary consequence of the Laws themselves. Finnagle's Fifth Law states, *"Whenever a system becomes completely defined, some damn fool discovers something which either abolishes the system or expands it beyond recognition."*

I give as an example, a paraphrase of a statement by a famous nineteenth century physicist upon the discovery of the electromagnetic theory of light, "Everything possible in physics has been discovered. All our descendants can do is to refine our measurements."

Then came Planck. — Maxey Brooke, Box 842, Sweeny, Texas.

*This makes compiling Finnagle's Laws illegal, I guess.*

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Dear Sir:

For some years now I've kicked around an idea which might be new to some of your readers. It could be called "The Principle Concerning Multifunctional Devices." This principle is usually stated: "Multifunctional devices are no damned good!" or in more precise language: "The fewer functions any device is required to perform, the more perfectly it can perform those functions."

Examples of multifunctional devices are the common household can opener that has a cork screw in the handle, long nosed pliers combined with cutters, and ordinary city streets. In each case the multifunctional device performs its various functions worse than would a substitute set of monofunctional devices: Separate can openers and cork pullers each designed for its specific job save you gouged palms and broken corks. Pliers that close tight enough to pick up small wires are a decided advantage, and cutters that will cut string are often useful, but cutters combined with pliers generally won't do this because the points of the pliers touch first. One-way streets with no parking allowed and "scramble" lights for pedestrians to cross separately from traffic solve many of the problems created by expecting streets to perform conflicting functions.

One way to test the applicability of the principle is to ask: Can a monofunctional device be designed which can do the job more perfectly than the proposed multifunctional device will do it? If it can, then the principle is upheld.

How important this principle is in practical situations depends on how important it is that a job be done as perfectly as possible. In emergency situations when you want a job to be done any way at all, just so that it gets done, then multifunctional devices are quite handy. It is still true, however, that the can opener in a

Boy Scout knife is a miserable can opener, and the screw driver always manages to fold up and cut your knuckles.

In many applications for economy's sake you have to compromise and settle for less than the best. Many people seem to feel, though, that it is possible to combine several functions in one device without sacrificing performance. "It's more efficient," they say. This principle would argue that such is not possible.

Comments? — Glenn Walker, 5018—19th Avenue N.E., Seattle 5, Washington.

*Considering the multi-multi-functional nature of Man himself, maybe this proposition is one of those that reverses when higher values are substituted? Specialized animals have all failed, and the more monofunctional they were, the worse the failure.*

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Dear Mr. Campbell:

You are dead wrong in your August editorial as far as the nature of science is concerned. Ordinary, garden-variety engineering may be as rigid as described, but as a geologist with a smattering of biology, chemistry, and physics, I must disagree violently *in re* science. True, the facts may ideally be determined beyond doubt (though in geology at least, even the facts of a matter are often in dispute); the meaning of the facts is opinion. Hypotheses and theories are opinions; only laws are supposed to be facts, and they may be challenged from time to time by a man who believes he has facts to support a different opinion. Perhaps the trouble with our technical schools is a failure to present the challenging, diverse opinions of science!

I enjoy your magazine, and have done so since 1951, when I was introduced to science fiction in college. A couple of issues in the past year have shown the message too strongly, but of course I agree with the basic editorial philosophy. My file of Astounding has given me three or four hundred hours of pleasant reading, if you need a further testimonial to soften the blast in the preceeding paragraph.—David Amsbury, 510 Stephens Street, Kerrville, Texas.

*Let's put it this way: the scientist holds that an opinion, hypothesis, or theory is a useful, though undesirable crutch, to be dispensed with on that happy day when a hard, nonhuman-opinion fact can be discovered. Science encourages opinion as a necessary, though unsatisfactory, means to an end—not as an end in itself.*

THE END

(*Continued from page* 7)

or not, by our repeatedly displayed attitude of supercilious superiority. We were oh-so-scientific. When Russia used good sense and judgment, and announced their effort to hoist a satellite into orbit only after they'd done it—there was much *tsk-tsk*ing about how those naughty Russians hadn't alerted the IGY people beforehand.

Look, friends . . . our missile people know the score—and they knew the score as of October, too. They knew perfectly well why the Russians hadn't announced the try beforehand—but they did *not* speak up, and explain the situation.

By not doing so when they were morally required to . . . they established a situation in which the United States was forced to announce our first try beforehand. What we got as a result, we earned in full; it doesn't pay to be holier-than-thou unless you're completely certain that you can do it, and put the claimed holiness on the line when called. We couldn't. We got, for our pains, one well-earned, world-wide horse-laugh.

The Russian and communist papers seem to have been the only ones in the world that didn't guffaw; even our allies, more than somewhat irked by our self-bestowed mantle of infallibility, joined in the laughter.

The Russians did the job the way it should have been done; try it in private, before you start telling all the world what wonders you're going to produce. Our missile men were fully aware of the problem; instead of heckling the Russians when Sputnik was launched, with "Nyah nyah—! You didn't tell us beforehand!" they would have been far wiser to explain *why* such things can't be publicly announced beforehand. Had they done that . . . then our own failure with Vanguard wouldn't have brought down on us the laughter it did.

It is completely beside the point to defend the advance publicity, as at least one newspaper did, on the grounds that "the American people are entitled to know." True; they are indeed. But the newspaper that pulled that line is, like our missile men, not being strictly and completely honest; it is also the duty of the newspapers and other public communication media, to see that they inform the American people not only of the truth, and nothing but the truth . . . but also the whole truth.

The advance publicity would not have hurt so seriously . . . if the publications had given equal "time on the air" to the immense difficulties involved in launching an experimental device.

It is not the duty of the publication media to print government handouts—nor are they doing their proper job if they confine themselves to easy-to-get, and no-trouble-to-publish government handouts.

True, the people have a right to know. But they also have a right to have their affairs handled in a sensible manner. The latter takes precedence over the former, when there is a conflict. Appropriate handling of the rocket research program calls for the wisdom to recognize the problem is real, tough, and not to be solved by wishing it away. Nor by appointing directors, publishing notices, or making loud assertions. The publication editor, under freedom of the press, is required to distinguish between privilege and freedom—and to distinguish between today's juicy headline, and the welfare of the nation.

The newspapers played only one side of the story—we were going to launch a satellite. They might have played up the tension of wondering whether this huge effort would work—the nerve-straining efforts, the dangers, the difficulties—they could have made it a great suspense-adventure story. They didn't. The missile men could have helped a lot by making it clear to the news agencies that it *was* a suspense-risk-adventure. They evidently didn't.

In the long run, it generally pays off to be completely honest about your difficulties, and to acknowledge in full the difficulties the other fellow has overcome.

We didn't. We earned the result we got.

That our scientists and technicians have worked hard, honestly, and done a solid day's work every day is beyond dispute. The trouble is, the nature of History is such that it doesn't pay off on the amount of effort invested . . . but solely on the basis of results accomplished. Results accomplished are not solely dependent on effort invested; there's an efficiency factor in there, too. The United States invested a lot more hard, solid, workmanlike effort in our thermonuclear weapon program than Russia did . . . but Russia achieved the same reward we did. History doesn't pay off on "I tried hard,"—it pays off on "I did the job."

I have, since Sputnik I went up, tried to get the official explanation of how the Russians got ahead of us on a technical achievement. The explanation I got from spokesmen of professional science runs something like this:

The United States has done a far more scientific, solidly based job of research. Naturally, this takes time, and a great deal of effort. Many lines of possibility have been meticulously researched, and the data obtained has been studied, evaluated, and integrated. Our far more scientific program — accumulating an adequate background of data, with plenty of cross-checking—has taken time, but will permit us to do a better job of design in the long run.

The Russians, by contrast, pick one line of development, and bull their way through. Their equipment is poorly understood, because no really broad, fundamental program of research lies behind it. The engineers, not having accurate data on the factors involved, have to overcome this weakness by "over-designing" components—using five pounds of metal where two would do, because they can't compute the factors well enough, lacking fundamental data, to know that two is enough. If technical problems of manufacture come up, instead of solving them, they overwhelm them by sheer massiveness. If they can't make a proper vacuum-tight seal, they make a rough seal and install a vacuum pump rather than solving the technical problem.

The American scientific approach does fundamental research in the area involved, and works out the technical problem. The result is that our equipment will be far better designed, far more efficient, than the relatively crude, massive, and over-designed Russian equivalent.

And that's why we don't have a beautifully designed, highly efficient six-inch satellite up there, while the Russians have a crude, massive, passenger-carrying half-ton-plus unit up in space.

We are assured that the failure of the Vanguard rocket was due to a mere mechanical difficulty, not to a failure of design.

The Russians, not being able to solve technical difficulties with the nicety and precision we do, would probably have bulled their way through by putting two pumps in parallel, because they couldn't be sure that one would work properly . . . and would have gotten the satellite up despite the mere mechanical failure.

The essence of ingenuity is the ability to get precision results without precision equipment. The equipment Lord Rutherford used to measure the diameter of the nucleus can

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Somewhere along the way, we've been sold a bill of goods. "Fundamental research" is not the sort of detail-diddling that is now so labeled in the United States. That's the European tradition of Fundamental Science—the one that caused Europe to be left behind by the ingenious efforts of American engineer-inventors. Fundamental Research is done with the mind—not with detail-data grubbing. Certainly detail data is needed—but sheer detail data is not equivalent to the intuitive-leap thinking of the great fundamental researchers. How many ordinary, patient pluggers does it take to replace one Einstein? How many tens of thousands of bits of data is equivalent to one new concept?

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If a machine can do it—it isn't research.

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The Russians are doing fundamental research; they're the ones who are trying things that can't be predicted logically.

Any possible problem can, theoretically, be solved by sheer trial-and-error. Given infinite time and persistence, that is. But Asimov showed, in "Hemoglobin and the Universe," that that idea is simply not valid in any real universe. Even so simple a problem as "What is the structure of hemoglobin?" can't be solved in this Universe by trial-and-error methods.

Equally, while it is theoretically defensible that any problem can be solved by logical analysis, given infinite time and persistence, and while it is true that the logical method is infinitely more efficient than trial-

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and-error—there are problems that can't be solved by the logical method in any real universe. There isn't time enough in the total duration of the Universe.

Some problems require a higher-order method.

The trial-and-error method is a sort of "point" method. You have to *be* at the point to be there, so to speak. There's no way to get there—you just *are* or *are not.* A trial-and-error test is just throwing things together, and seeing what happens. Then throw it away, because you had no method of selecting what you threw together—it just happened.

Logical analysis is a line-of-points method. In logical testing, you progress in an ordered fashion; you know where you've been, where you are, and where you're going. But it's a linear system; you can't skip. Like a magnetic tape, on which the information is recorded sequentially, you've got to run down the whole length of the tape if you want to reach an item recorded near the end.

A phonograph record is different; it has two-dimensional access. You can reach any given point on it by following along the spiral groove, using an essentially linear search technique like that of the magnetic tape. But you can pick up the needle, and move across at right angles to the grooves, and reach a remote point by a short-cut.

"Ingenuity" apparently involves using a two-dimensional-access technique of thinking. It short-cuts logical process, and arrives at the logical answer directly. The result is a logical answer—but has not been reached by logical process. The answer is logically defensible, once obtained—but not logically attainable.

Currently, the Scientist demeans the "mere engineer"—and, unfortunately, the Scientist has succeeded in so over-awing the Engineer, that the Engineer is following the Scientist faithfully.

Some engineering stems from the results of Science; when Science has cracked the problems in an area, the Engineer can heave a sigh of relief, because he'll have some sound, solid, dependable guides to work from.

But—all *fundamental science stems from engineering!* The Engineer, not the Scientist, is properly the leader of the parade; the Scientist should be the follower, not the leader!

Reason: Engineering has one, and only one, valid criterion—"If it works, it's good engineering; if it doesn't work, it's not engineering." Engineering can be good engineering, when it is totally unscientific—when there isn't the faintest, foggiest trace of a notion of what makes it work. There were Roman engineers building magnificently sound bridges, aqueducts, and roads, long before there were chemists to explain why mortar worked. Damascus armorers were producing first-class spring steel before the crudest beginnings of metallurgical science. And, of course, there were living organisms for billions of years before there were biochemists.

When things work properly, Engineers, working by rule of thumb, find and start using forces in the Universe—and Scientists come along behind, studying what the Engineers have done and are doing, and puzzle out these strange things. Science must learn to explain what Engineering does—*it is not up to Engineering to do what Science explains.*

Anything that can be done, anything that can be made to work, is good, sound engineering—and Science has the duty of explaining it if it can. If it can't—well, we can, after all, get along without an explanation of how it is we think. But we can't get along without thinking.

Science, in this country, has somehow managed to get the upper hand, and establish itself as the Leader of the Parade.

It isn't, never was, and never should be. Engineering comes first—because that's the area of try-it-and-see.

The Scientist can broaden the breakthrough the Engineer produces. In the old, military meaning of Engineer, it was the Engineer who breached the walls. The army followed after, widened the breach, and held the advance won.

Our Vanguard satellite is a very scientific satellite indeed.

It hasn't achieved a breakthrough.

Russia's crude, rule-of-thumb engineering design, complete with inadequate data, and safety-factors to make up for that fact, did the job.

It's time, I think, for Scientists to recognize that they, like Generals, don't belong in the front line of advance. That job belongs to younger, more active men, with less special training, and more dexterity.

Wonder just what they are doing with that Savannah River plant, now nobody has any real use for tritium?

THE EDITOR.

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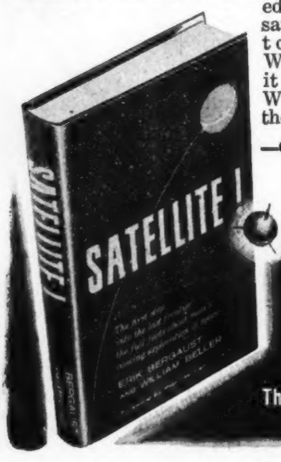

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